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World University Rankings

2023

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As the number of universities in the ranking expands, the global picture is shifting. And with geopolitical volatility yet to have its full impact, several university leaders reflect on their time in office

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Magic eye on changes

Biggest ever World University Ranking reveals how Africa rises as US' crown slips, writes Rosa Ellis

In the 1990s British newspapers published "magic eye" pictures – diagrams made up of thousands of small dots from which, if you squinted, 3D images would emerge. Comprehensive datasets offer something similar: when sliced in the right way, millions of datapoints reveal trends and insights. That is what we aim to do with the World University Rankings: our 13 metrics, grouped into five pillars, combine data on 1,799 universities from 104 countries and regions. It is a goldmine of revealing trends.

This year, the data show that many countries are in strong positions when it comes to higher education, but they also suggest that America's crown is slipping, which we explore on page 10.

China, Saudi Arabia and the UAE all continue to climb, although cracks may be starting to appear in the Chinese system.

Africa is showing a marked improvement, with the largest increment in universities ranked, up from 71 to 97. Five countries entered the rankings for the first time ever, all of them African: Mauritius, Mozambique, Namibia, Zambia and Zimbabwe.

Although things are looking bright, the ranking data are only just beginning to reflect the chaos of the pandemic. And beyond Covid-19, war was started in Europe and other geopolitical tensions are bubbling.

The higher education landscape is certainly changing. So, what are the biggest opportunities and threats facing universities? We asked leaders from top institutions across the world to answer this question, in respect to four areas that the World University Rankings measure: research, teaching, knowledge sharing and internationalisation.

We've heard from Brian Schmidt, vice-chancellor of the Australian National University and Nobel prizewinner, who fears that prioritising applied research over basic will hamstring progress. He believes the modern world treats entrepreneurs as kings, but it is academics who hold the keys to solving humanity's problems.

Meric Gertler of the University of Toronto is positive that research will be boosted by the steady rise in international collaboration, the power of which was made apparent during the pandemic. He is deeply concerned about rising geopolitical tensions, however, saying the effects on international research collaboration of Russia's invasion of Ukraine are already being felt.

Rianne Letschert, president of Maastricht University in the Netherlands, sees getting internationalisation right as the greatest challenge in the coming years, but is clear that the motive should not be revenue.

We also interviewed four vice-chancellors of top universities who happen to be stepping down imminently (a decision they made unrelated to their interviews with *THE*!). You can hear what Dame Louise Richardson of the University of Oxford, Stephen Toope of the University of Cambridge, Andrew Hamilton of New York University, and Alice Gast of Imperial College London all think of the challenges ahead.

Change is certainly afoot for global higher education, but armed with data, hopefully we can stay one step ahead of the trends. ●

Rosa Ellis
Acting rankings editor,
Times Higher Education

> The ranking data are only just beginning to reflect the chaos of the pandemic

COUNTRIES/REGIONS REPRESENTED

Country/region	Number of institutions in top 200	Top institution	Rank
United States	58	Harvard University	2
United Kingdom	28	University of Oxford	1
Germany	22	Technical University of Munich	30
China	11	Tsinghua University	16
Australia	10	University of Melbourne	34
Netherlands	10	Wageningen University & Research	59
Canada	7	University of Toronto	18
South Korea	6	Seoul National University	56
Switzerland	6	ETH Zurich	=11
France	5	Paris Sciences et Lettres – PSL Research University Paris	47
Hong Kong	5	University of Hong Kong	31
Sweden	5	Karolinska Institute	49
Belgium	4	KU Leuven	42
Austria	3	University of Vienna	=124
Denmark	3	University of Copenhagen	=114
Spain	3	University of Barcelona	182
Italy	2	University of Bologna	=161
Japan	2	The University of Tokyo	39
Singapore	2	National University of Singapore	19
Finland	1	University of Helsinki	110
Ireland	1	Trinity College Dublin	=161
New Zealand	1	University of Auckland	=139
Norway	1	University of Oslo	126
Russian Federation	1	Lomonosov Moscow State University	=163
Saudi Arabia	1	King Abdulaziz University	=101
South Africa	1	University of Cape Town	160
Taiwan	1	National Taiwan University (NTU)	=187

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Shifting global picture

US stagnating, Oceania rising, and a weak point for China, as five countries enter the ranking for the first time – all of them in Africa. Rosa Ellis reports

> The expanding number of world-class universities is having a slight crowd-out effect in relation to US universities

To describe the past three years in higher education as tumultuous would be something of an understatement. The pandemic and its lingering impact on borders, plus a war in Europe and rising anti-science rhetoric have collided to make the early 2020s some of the most difficult years for universities in recent history.

This year the data used in the World University Rankings are beginning to reflect the chaos caused by the pandemic: what they show is that many systems entered this period of disruption in positions of strength.

Here, we look at some of the top trends to emerge from this year's rankings, and what they might mean for the future.

North America, in particular the US, has for a long time reigned supreme over higher educa-tion. At the highest level, US institutions continue to dominate, with 12 universities in the top 20, but taking a broader view of US performance, it is clear that the crown is slipping. This year, for the first time, continental data reveal that Oceania has overtaken North America to enjoy the distinction of the highest average overall score (based on universities ranked each year since 2018).

The average score across Oceania is 51.4, compared with 50.4 in North America; last year, both regions scored 50.4.

Having increased by 6.4 points over the past six years, the overall score of Australia has now almost equalled the overall score of the United States.

So, what is behind the North American stagnation? The data reveal a steady drop in scores for citations over the past two years:

currently the continent's average score for citations is 68.8, compared with 70.1 in 2018. North America's average score for research reputation has dropped since 2018 from 25.5 to 24.0, and for teaching reputation from 25.9 to 23.6, based on universities that were ranked every year from 2018 to 2023.

Simon Marginson, director of the Centre for Global Higher Education at the University of Oxford, says the expanding number of world-class universities is having "a slight crowd-out effect in relation to US universities", causing a small relative decline in reputation. *THE*'s reputation survey asks the world's top scholars to name the 15 best institutions for teaching and research; the finite number means this is a story of a growing number of excellent universities outside the US, rather than Ameri-

can universities declining in quality.

"There's no evidence that US research is weakening in an absolute sense, or US universities are in any way in decline," Marginson says. "This continues to be the most prestigious system in the world."

Oceania, on the other hand, has been enjoying a steady rise in average score for every pillar in the rankings since 2018. In particular, the continent is excelling in citations and international working.

This increase is largely driven by Australian institutions: the average overall score for Australian universities ranked each year is currently 52.9, up from 51.7 last year and 46.5 in 2018.

Andrew Norton, professor of higher education at the Australian National University, attributes the rise in part to a boost in funding for research over the past 15 years.

Merlin Crossley, deputy vice-chancellor at the University of New South Wales, says the Australian government's Excellence in

Research for Australia (ERA) strategy, initiated in 2010, certainly helped. "But other things helped too. Australia built up some superb research fellowship programmes, in medical research first, then, with the Australian Research Council's Future Fellowships, across the board. This warded off the well-meaning hand of nepotism and supported top people to do good work."

The rise in both citations and international working is no coincidence, according to Gavin Moodie, professor of higher education at the University of Toronto, who has

much experience of the Australian system. "Several years ago the Australian government's performance-based research funding rewarded volume of publications. However, a series of studies demonstrated that this was at the expense of research quality for which citations were a better measure. Soon thereafter, a few studies showed that citations were higher for publications with authors from more than one country, so university researchers started seeking to increase citations and thus international collaborations. This move was reinforced by ERA, which adopted similar indicators of research quality."

The data on international students and staff reflect the academic year 2019-20, therefore the full force of Australia's strict border control in reaction to the pandemic is yet to be felt. Could the hard border reverse the growing international presence of Australian universities?

Norton believes the decline in international students will have an impact because the cash they bring in is used to fund research. Furthermore, "the number of research academics has fallen, and during 2020 especially the loss of casual staff meant that 'teaching and research' academics needed to spend more time on teaching than usual. However, the lagging nature of publications and citations means that it may take a few years for this to show clearly in the citation numbers."

"Some Australian universities have been successful in getting students to study online, but generally the fees and therefore profits are lower," he adds.

Crossley is optimistic: "Online collaboration helped me during the pandemic. Colleagues I usually saw once every two years, I called on Zoom regularly. Many of our labs stayed open across the pandemic. We're back travelling again now. We have deep links to the UK and Europe, America, and Asia. The world's population centre of gravity is in Asia and we're in that time zone. I'm hoping we'll keep evolving as either a sort of Scandinavia or perhaps a Canada of the south."

The rise of Chinese universities has been the big global higher education story of the decade, but the latest data may reveal a weak link.

While the country's overall score is still rising, metrics reflect-

> **We are now in a more conflictual era in the geopolitics of higher education**

PICTURES: GETTY

> When comparing continents over the past six years, Africa has seen the largest increase in average score for citations since 2018

ing internationalism are stagnating or declining.

China's average score for international outlook dropped from 34.1 last year to 32.6, based on all Chinese universities ranked in 2022 and 2023; the country's average score for international students has dropped from 33.9 to 32.4, international co-authorship from 24.0 to 22.5, and international staff from 44.3 to 43.0.

As these data reflect the academic year 2019-20, the pandemic border closure is not the driving factor behind the decline.

Geopolitical tensions are more likely the culprit.

As the education system has improved there may be fewer incentives for Chinese universities to forge external links, but Western governments have certainly become increasingly jittery about links with Chinese academia.

Under former US president Donald Trump, the US Justice Department took a more punitive approach to university links to China by investigating professors at US universities over whether they disclosed financial ties when seeking federal grant funding and scrutinising visiting Chinese scholars from military affiliated universities.

In the UK, GCHQ, the government's communications headquarters, warned universities about "hostile state actors" targeting British institutions to steal personal data, research data and intellectual property that could be used for their own "military, commercial and authoritarian interests".

Marginson posits that as Chinese scientists and doctoral students have become less welcome in some countries than they used to be, "it is likely that sooner or later, higher education in China will [be] less welcoming to outsiders from at least those countries. That is the

logic of international relations."

"It would be regrettable if the growth of foreigners working in higher education in China has stopped, as the engagement is good for everyone. However, it would be unsurprising, as we are now in a more conflictual era in the geopolitics of higher education," Marginson added.

"It would be safe to say that geopolitics is playing a significant role," says James Laurenceson, director of the Australia-China Relations Institute at the University of Technology Sydney. "It is certainly the case that Chinese academics are more cautious and have to jump through more bureaucratic hoops to engage [with their] foreign counterparts than five years ago. Some have judged that it's best just to keep their heads down."

Governments outside China are making engagement harder, Laurenceson says, giving the example of Australian Research Council discovery grants involving collaboration with China dropping to 23 this year, from 48 in 2021 and 79 in 2019.

He says the Australian government has made "extensive efforts" to "sensitise universities and academics to risks around foreign interference. On one level that's a perfectly reasonable thing to do. But it is also leading to significant self-censorship by Australian academics not wanting to be tarnished with a foreign interference brush, even if their engagement is entirely defensible based on the facts."

The wilting global collaboration metrics do not take away from China's overall positive picture however, as the country's average score

has risen from 31 six years ago to almost 42 this year. This year, for the first time, there are 11 Chinese institutions in the top 200 and seven in the top 100.

Chinese universities are exceptionally good at securing funding from industry, with the average score for the industry pillar outperforming the world average by 13.1 points, and when it comes to research quality as measured by citations, China is steadily catching up with the US.

And there are plenty more positive stories to be found in this year's data. Not least the rise of Africa. There are 25 new African universities in the ranking and Zambia, Namibia, Mozambique, Zimbabwe and Mauritius are all represented for the first time. There are now 17 African countries in the ranking in total, compared with nine in 2018, reflecting the continued improvement in research and teaching on the continent.

Nigeria in particular is improving rapidly. There are now 12 Nigerian universities ranked, twice as many as last year. Since last year the country's average overall score has risen from 27.9 to 31.5.

When comparing continents over the past six years, Africa has seen the largest increase in average score for citations since 2018, with a rise of 19.2 points.

Over in the Middle East, two countries that are improving their overall score at a faster rate than the global average are Saudi Arabia and United Arab Emirates (UAE).

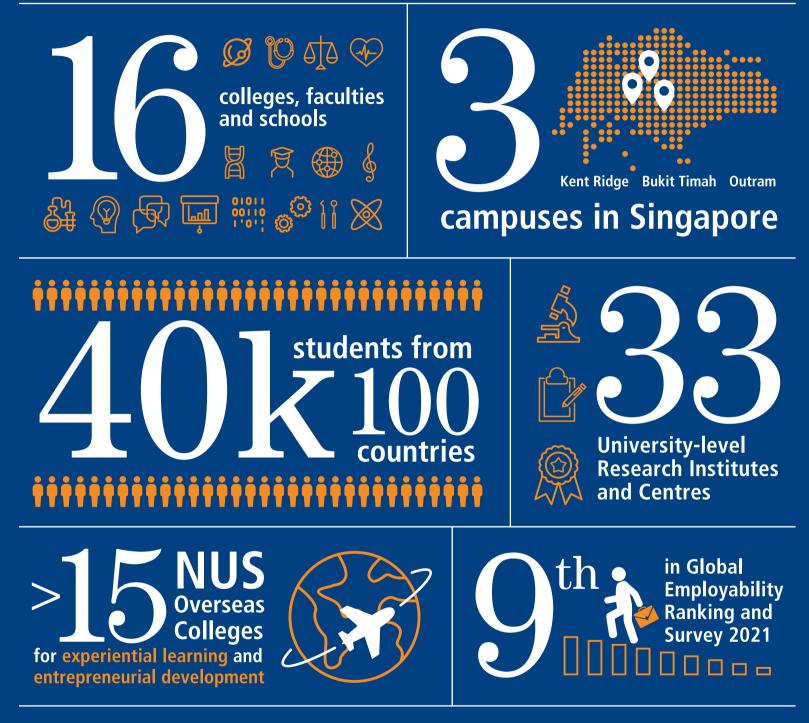Saudi Arabia has had the biggest increase in overall score since last year, with an average overall score of 50, compared with 45 last year; since 2018 the average score has risen by 17 points. The country scores particularly well on the international pillar, and on international staff especially.

UAE saw a similar rise, with an average overall score of 44.4, up from 40.0 last year.

Over the next couple of years the rankings data will paint a more detailed picture of the impact of the pandemic, but what we can see so far is that despite the many problems facing humanity, university systems across the world are resilient. ●

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Mission: possible

Universities face growing public pressure but this only means their mission is more vital than ever, NYU president Andrew Hamilton tells Rosa Ellis

"Complex forces are at play," says Andrew Hamilton. The rather ominous phrase is surprising coming from the otherwise energetic and upbeat president of New York University.

Political polarisation and waning public support for higher education are two of the forces troubling him. "Different sides of the political spectrum view higher education in very different ways," he says. "Public perception of higher education is declining, the view of higher education as being essential for life, the public's view of the role that higher education is playing in wider society, is, I regret to say, declining."

This is a US problem, but is also seeping into other countries, including the UK, says the Brit who has made New York his home. And those nations that do not face this particular battle have others: "Each of us are seeing a set of challenges to our principal purpose."

Hamilton spoke to *Times Higher Education* ahead of the World Academic Summit, *THE*'s largest annual event, hosted in 2022 by his own New York University. He discusses his worries but also his reasons for hope, and looks back on his achievements as president of NYU before he steps down next year.

One of the issues Hamilton anticipates being thrashed out in the debates and fringe events at the summit is how to bolster the public perception of universities. "We need to think about ways of getting across the message of why university matters," he says. "And it does! It's never mattered more than it does today, it's never been more important to get a college degree for a productive and prosperous life than it is today."

"I often think that one of the reasons we get so much attention focused on higher education is because we've never actually been more important," he adds.

Hamilton began his tenure at NYU on 1 January 2016, following six years as vice-chancellor of the University of Oxford. He has spent much of his life hopping between the UK and North America: he was born in Surrey in the UK, studied at the University of Exeter and then the University of British Columbia, and completed his PhD at the University of Cambridge. He's a chemist with a focus on the intersection of organic and biologic chemistry and worked at Yale for many years before taking the helm at Oxford in 2009.

He ruffled some feathers at Oxford when he advocated raising tuition fees in a period in which they were one of the biggest political hot potatoes in the UK. It was a surprise to some then when he doggedly took on the issue of affordability at NYU.

Hamilton says that when he began his tenure, NYU topped the ranking for price tag. So he staved off price increases each year and the institution is now about the 50th most expensive in the US. He also increased financial aid to more than half a billion dollars, and he boasts of having a higher percentage of Pell Grant students than Harvard, Princeton, Yale and Penn combined (at 24 per cent).

Reducing fees and spending more on aid means less cash to spend on research and teaching, so was Hamilton worried it would have a detrimental impact? "Oh, we are constantly worried about everything. The life of a university president is the worrier-in-chief," he says. It doesn't appear to have harmed NYU in the rankings anyhow (currently ranked 24th in the world, it was in 30th position in 2016).

The university achieved this,

> "It's never been more important to get a college degree for a productive and prosperous life than it is today"

PICTURES: GETTY

> "
> The role of a university – yes, it's to help the students get their first job. It's also to help them get their fifth job, 20 years later "

Hamilton says, by being targeted; "Identify[ing] and invest[ing] in academic areas that can be effective, that can advance the mission of the institution."

NYU is known for making a success of foreign campuses, with substantial offshoots in Abu Dhabi and Shanghai, established under Hamilton's predecessor John Sexton. The heyday of setting up fully fledged campuses abroad is probably behind us, and some may see rising geopolitical tensions as reason to limit them, especially in certain areas of the world, but Hamilton sticks by the strategy.

Russia's invasion of Ukraine and increasing tensions between the US and China "reinforce why we shouldn't be withdrawing, we shouldn't be isolating ourselves", he says.

He insists now is the time to do more to understand each other's cultures, histories and backgrounds. When people challenge NYU's China campus, he says he responds by asking, "Surely you're not suggesting we should have

fewer people in the United States who can speak Mandarin? Who are familiar with Chinese culture and Chinese history?"

Students return from their international campuses "transformed", he says. "They come back often speaking the language, very familiar with the culture and the historical forces that are at play. And then they too can play their role in the national debates and discussions that naturally take place over time."

On home turf, universities in areas with high costs of living sometimes struggle to hire faculty and recruit students. Perhaps the lure of living in one of the world's most glamorous cities balances out the price tag, as Hamilton says they do not face this concern.

"New York City is a dynamic city, the links to business, the opportunities for internships, the opportunities for collaborations among our faculty, the cultural side of the city, that's all acted as quite a strong magnet to recruit students and to recruit faculty."

The theme of the World Academic Summit is "trajectories", which for Hamilton applies to the trajectories of institutions and regions as well as the intellectual and socio-economic trajectory of young people. "The role of a university – yes, it's to help the students get their first job. It's also to help them get their fifth job, 20 years later."

In a rapidly changing world, universities will need to fight hard to keep those trajectories going in a positive direction, but Hamilton is confident they will, with their secret weapon: reinvention.

"People always accuse universities of being static," he says. "We are not, we are incredibly dynamic."

"I always like to remind people that Oxford was already 300 years old when the previous information revolution occurred – it was called the printing press. Universities did pretty well in embracing the book."

As then, universities are embracing the new circumstances brought about by the pandemic – such as online learning – and adjusting what they do.

Democracy and decentralised decision-making is another trick up the sleeve of universities, he says. Having run Oxford, probably the most famous decentralised university in the world – "pathologically" decentralised, Hamilton says with a laugh – he should know.

Oxford is nearly 900 years old, he points out, and NYU nearly 200. This decentralisation is "part of the secret to the longevity of universities".

"One of the great strengths of universities, I believe, is that devolution, that sense of individual schools, even individual departments, faculty and student groups, having significant responsibility."

During their time universities have seen a lot: "A lot of economic crises, a lot of Donald Trumps and Boris Johnsons, even quite a good number of pandemics have been and gone in the life of a university like Oxford or NYU or Yale."

In summer 2023 Hamilton will step down as leader. What is his advice to other university leaders? "Hang in there. They are tough jobs these days.

"But they are also sublime and a privilege," he adds. ●

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University collaboration beyond boundaries

Reflecting on an extensive interview series conducted by City University of Hong Kong, its president **Way Kuo** shares some of the key insights

As universities the world over face pressure to become increasingly globalised in their approach to teaching and research, leaders can learn from one another's experiences. This was the philosophy behind Beyond Boundaries, an interview series produced by City University of Hong Kong (CityU HK) and undertaken by the university's president, Way Kuo.

Over three years, Kuo conducted 32 interviews with leaders of some of the world's top education institutions, spanning Asia, Africa, Europe and North America. CityU HK is an international university that emphasises the integration of research and teaching. The university promotes diverse cross-cultural studies through various programmes, and its Beyond Boundaries series is an extension of that. "All of the institutions I engaged with inspire us in one way or another as they have their own niche and missions," Kuo says.

One of the reasons for making the series was to explore the challenges that universities face in becoming more global while also staying relevant to their local communities. "Globalisation and localisation have gone hand in hand over the past few decades.

There is what we call a 'process of glocalisation'," Kuo says.

Reflecting on what he learned from conversations with fellow leaders during the series, Kuo says: "Glocalisation is ongoing in all the universities covered by this project. Such a process is particularly evident in younger and smaller countries, such as Singapore, Israel, South Africa and Georgia. There, universities shoulder the dual mission of educating students for the globalised labour market and helping with nation-building by providing education on national imagination, national discourse and national identity."

While the challenges faced by institutions vary between regions – and even within the same countries – Beyond Boundaries highlights some common themes. According to Kuo, the accelerated global mobility of talent has resulted in greater competition for universities in recruiting and retaining faculty members. "Although the brain drain prevalent in developing countries has slowed down, there is still a trend of talented scholars being attracted to institutions where there are more resources and better opportunities for career advancement," he reflects.

Similarly, the shift towards globalisation has imposed "uniform requirements for professional certification" and "a certain level of standardisation" in terms of higher education curricula, as graduates are expected to be employable to a much broader global market than before. "Currently, there are two major competing educational systems in the world: the American system and the European system," Kuo notes. While the European system has been standardised as a result of its participation in the Bologna Process, "the compatibility between this regionally integrated system and the American system necessitates further collaboration and adjustment.

L-R: Way Kuo, president of City University of Hong Kong, interviews Tan Eng Chye, president of the National University of Singapore; Mamokgethi Phakeng, vice-chancellor of the University of Cape Town; Eric Labaye, president of Institut Polytechnique de Paris; and Joy Johnson, president of Simon Fraser University

The two competing systems also pose a challenge to those who are trying to select one or the other system," Kuo says.

Another shared challenge felt by many institutions is the desire to participate in global university rankings. "Although those rankings measure some aspects of a university's prestige, research outcome, resources, employment of students and internationalisation, they are by no means perfect," Kuo says. As a result, he believes universities often have a "love-hate attitude" to such rankings.

As new technologies such as artificial intelligence and genomics come to the fore in many areas of research, universities share the challenge of addressing big ethical questions – something reflected in many of the conversations between leaders in the Beyond Boundaries series. Such ethical questions have gained "greater urgency because of the rapid advances in those fields", Kuo says. Ultimately, it is collaboration and transparency between different institutional research projects that will help find solutions to these challenges.

The timing of the Beyond Boundaries series threw a spotlight on an additional global challenge that will require continued thought from higher education institutions in the coming decades: the delivery of education in the context of global disasters, such as the ongoing Covid-19 pandemic. "Traditional classroom teaching was almost completely toppled by the pandemic at the time of its peak," Kuo says. "Online teaching has been expediently used as an alternative platform of education delivery. Universities around the world are just beginning to assess and cope with the issues of such delivery, such as quality and its assurance, interaction between teachers and students, psychological impact on students, and selection of appropriate platforms and infrastructure."

As of 2022, the CityU HK campus offers seven doctoral degree programmes and eight master's programmes, and its students and postdoctoral community have founded more than 70 start-ups in New York, generating $75 million (£64 million) in investment. "It is one of the first innovative university campuses in the world that combines teaching and entrepreneurship and directly incubates start-up companies on campus," Kuo says.

The three-year-long interview project has left Kuo with "many lingering memories" of enjoyable conversations with many "very impressive leaders". "When the project was first conceived, the plan was to produce six videos that would explore five major themes presented in my book, *Soulware: The American Way in China's Higher Education*," Kuo explains. These are "the internationalisation of higher education; the integration of teaching and research; the separation of politics and education; quality and evaluation; and creativity and innovation. The project eventually turned into 32 videos and explored myriad issues that far exceeded those five general themes." An updated version of Kuo's book, titled *The Absence of Soulware in Higher Education*, includes some of the observations made by the education leaders featured in the Beyond Boundaries project. It will be published in 2023.

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Learning technology, training for skill improvement, and network collaboration to drive industrial development starts at EEC Automation Park.

Precarity and elitism

Louise Richardson, the outgoing head of Oxford, talks to Rosa Ellis about her fears of a brain drain and the highs and lows of her tenure

The hardest time in Dame Louise Richardson's career was not running the world's top university during a pandemic, but rather being a junior faculty member with three young children. Since then, pressure on early career researchers has only increased and the outgoing vice-chancellor of the University of Oxford is worried about a brain drain, especially of women.

Richardson spoke to *Times Higher Education*, to give her views on the future of higher education and the highs and lows of her time at Oxford.

The squeeze on younger academics is "particularly acute" at Oxford, Richardson admits, "where, depending on the nature of the appointment, they might have college obligations, teaching obligations in a college as well as departmental obligations".

"We have people, terrifically smart people, who go from contract to contract. Many of the people working on the [Covid-19] vaccine were on fixed-term contracts. This is difficult on your personal life, in terms of getting a mortgage and so on."

Increasing regulation is also impacting younger researchers. "The reason I became an academic was because I loved the autonomy

that I could work on whatever I wanted to do," Richardson says. Now "autonomy is being eroded as well, with more and more regulatory constraints on people. So I worry that we're asking an awful lot of early career researchers and not providing them the support that they really need."

Oxford has developed an early career researchers' hub that offers advice. A senior faculty member is an early career champion and the university recently appointed an early career researcher to the University Council because that perspective was missing, Richardson says.

One somewhat radical solution, being tried elsewhere including at the University of Leeds in the UK, is simply offering researchers permanent jobs. They are in the early stage of trialling this at Oxford, she says, but only in certain academic areas where the cohort is large enough for researchers to slot into other projects when theirs ends. "You can't move a social scientist to start working on quantum physics," she points out.

Despite the steps taken at Oxford, Richardson does not appear upbeat: "I would love to say we'd solved this problem, but we haven't."

Born on the southeast coast of Ireland, as one of seven siblings,

Richardson was the first in her family to go to university. She is hesitant to talk about her personal life but does say, "I came from a very different world than the one I currently occupy."

One of Richardson's proudest moments at Oxford was, unsurprisingly, overseeing the development of the Oxford AstraZeneca vaccine for Covid-19. Persuading big pharma to agree to forgo profit on the vaccine in the developed world until the pandemic was over, and never to make a profit in low-income countries, was no small feat. Perhaps she honed her negotiation skills trying to govern the notoriously unruly Oxford faculty? "Let's say I get lots of practice," she laughs.

Richardson and her two prede-

> "We're asking an awful lot of early career researchers and not providing them the support that they really need"

cessors have been outsiders rather than Oxford dons, in theory bringing a greater readiness to challenge institutional norms and update Oxford's famously democratic, some say unmanageable, governance system.

Richardson herself had a "One Oxford agenda", to encourage collaboration between the central university and Oxford's 39 financially independent and self-governing colleges. Does she think the appointment of an insider, Irene Tracey, as her successor signifies an acceptance of the status quo? Richardson won't be drawn on the insider-outsider debate, saying "the committee chose the best candidate."

She does point out, though, that during the pandemic the college system came into its own. "Unlike other large research universities, where if you're a student it's very easy to get lost in them, because of the college system we have these relatively small communities where students are known. And so the colleges could take care of the pastoral needs of students during the pandemic."

She adds: "The issue is less the collegiate system itself, and the fact that there are real differences between the colleges, it's not as though there are 39 colleges and the university, there's actually very significant differences in scale, in financial terms, between the different colleges, and so that's an area where I think work needs to be done," she says. "They all have their own distinct cultures. Some are fabulously wealthy, and some are much less so. That has an impact on the lives of the people who live and work and study there."

Does she mean the financial sit-

> If we want to be a science superpower, we really need to be serious

uation should be evened up? "Haha, I'm not going to be quoted saying that! I just look forward to the colleges' working together to see how they can address that," she says with a smile.

As well as pulling off the vaccine, Richardson is proud of her fundraising, which includes a £1 billion bond ("the largest, cheapest, longest bond in UK higher education," she says), a £4 billion deal with Legal and General for capital projects and a boost in philanthropic donations.

She thinks it's crucial, though, that the government also pays more mind to the funding of higher education, including the issue of tuition fees. They must "deal with the fact that the fees are cast in stone and are declining in value and really seriously being eroded by inflation". She also thinks there should be greater tax incentives for philanthropy. "I really tried to up the game, and I think we have in philanthropy at Oxford, but it would be great to see this done at a national level."

"If we want to be a science superpower, we really need to be serious," she says. "We absolutely

have to secure research funding. And to be honest, I've been deeply disappointed at the pedalling back from the commitment to the Oxford Cambridge Arc." The government appears to have quietly lost interest in the plan to boost the areas between the two universities, including a new major road linking them. "I think that the decision was made to pedal back because it didn't seem to be consistent with the levelling-up agenda, but actually, you know, it could in fact be an engine for levelling up, and it doesn't have to be at the cost of other parts of the country."

"If we were to ramp up the area of the golden triangle, as it were, and invest in it, there would be all kinds of benefits for the rest of the country," she adds.

Richardson's academic area is global security, and she is well aware of the risks of falling behind in science and technology. "I don't think we can afford to allow potential political competitors to gain the upper hand in science. No, I don't think the US or Western countries can afford to allow that to happen."

Is there anything she would do differently, then, if she were starting at Oxford again? Richardson admits to errors in handling the pensions dispute. "Early on, I don't think we managed the pensions issue as well as we should have done. I don't think we quite appreciated the depth of feeling amongst the academics."

She also says she would speak to the press less often. "I live in fear of being distorted by the press," she says, "I've been burned so many times. You have no idea."

When Richardson moved to the UK she was surprised at how the globally admired Oxford was pilloried by the UK media. "Seeing us criticised daily in the press for being too posh, being too this, too that, too removed, I really wanted to change the public perception of the institution." She believes she has managed to do that somewhat, via Oxford's role during the pandemic and by widening access.

The issue of universities being linked to privilege is a difficult one to navigate, as they are by their nature linked to personal progression. Richardson suggests Brits should embrace elitism: "I think we have to change the attitude towards elite. We're proud of elite football teams, why are we not proud of elite universities?" ●

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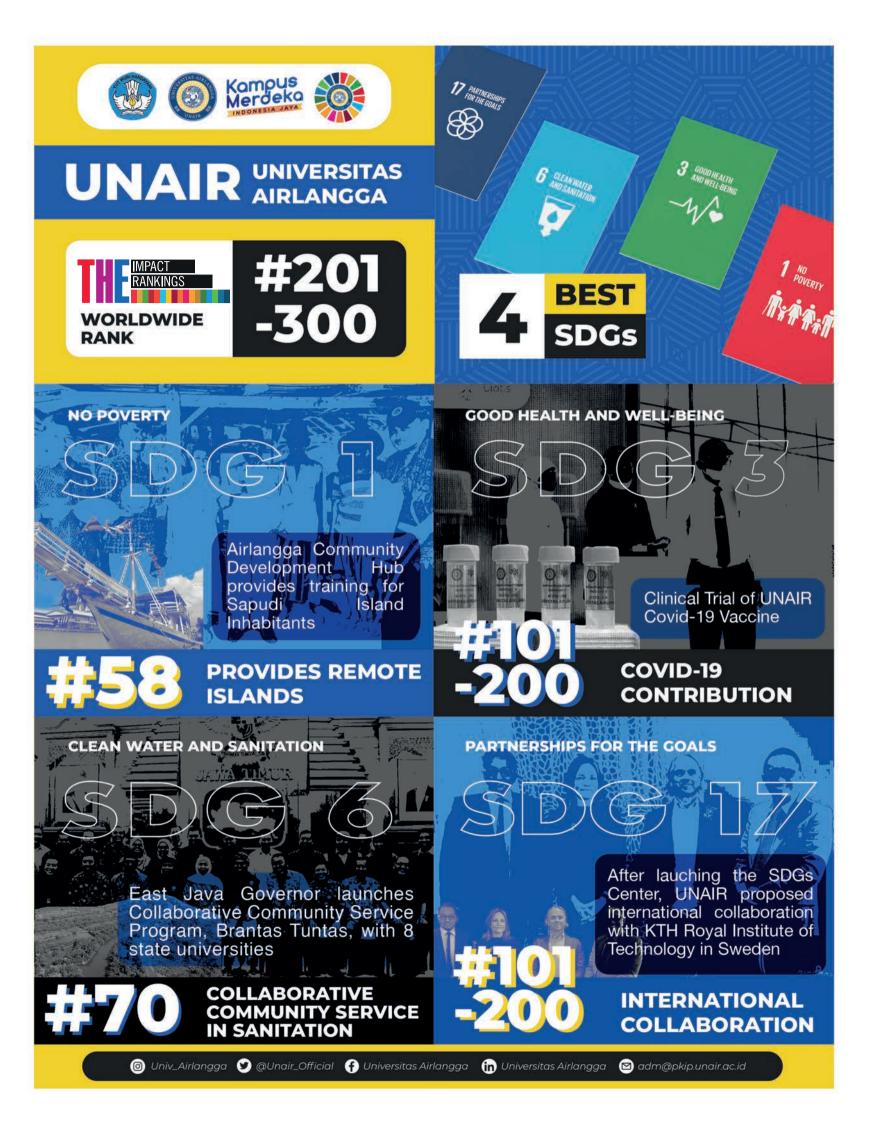
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Rank 2023	Rank 2022	Institution	Country/region	Teaching	Research	Citations	Industry income	International outlook	Overall score
1	1	University of Oxford	United Kingdom	92.3	99.7	99.0	74.9	96.2	96.4
2	=2	Harvard University	United States	94.8	99.0	99.3	49.5	80.5	95.2
=3	=5	University of Cambridge	United Kingdom	90.9	99.5	97.0	54.2	95.8	94.8
=3	4	Stanford University	United States	94.2	96.7	99.8	65.0	79.8	94.8
5	=5	Massachusetts Institute of Technology	United States	90.7	93.6	99.8	90.9	89.3	94.2
6	=2	California Institute of Technology	United States	90.9	97.0	97.3	89.8	83.6	94.1
7	7	Princeton University	United States	87.6	95.9	99.1	66.0	80.3	92.4
8	8	University of California, Berkeley	United States	86.4	95.8	99.0	76.8	78.4	92.1
9	9	Yale University	United States	92.6	92.7	97.0	55.0	70.9	91.4
10	12	Imperial College London	United Kingdom	82.8	90.8	98.3	59.8	97.5	90.4
=11	11	Columbia University	United States	89.4	87.7	97.1	44.8	79.9	89.4
=11	15	ETH Zurich	Switzerland	82.6	95.4	90.7	59.1	97.7	89.4
13	10	The University of Chicago	United States	86.5	88.8	97.7	56.2	74.2	88.9
14	=13	University of Pennsylvania	United States	86.0	88.8	97.0	75.8	71.5	88.8
15	=13	Johns Hopkins University	United States	79.4	91.5	97.0	89.5	75.3	88.3
16	=16	Tsinghua University	China	90.1	97.4	88.0	100.0	40.3	88.2
17	=16	Peking University	China	92.5	96.7	80.4	91.8	65.0	88.1
18	=18	University of Toronto	Canada	77.3	93.3	92.8	65.5	89.7	87.4
19	21	National University of Singapore	Singapore	76.4	93.0	90.2	87.0	94.0	87.1
20	22	Cornell University	United States	80.2	86.1	97.3	40.4	76.9	85.9
21	20	University of California, Los Angeles	United States	80.4	88.9	95.4	58.8	65.0	85.8
22	=18	UCL	United Kingdom	74.5	85.4	97.9	44.5	96.7	85.7
23	=24	University of Michigan-Ann Arbor	United States	79.3	84.6	93.6	48.7	59.2	82.9
24	26	New York University	United States	74.2	84.0	95.0	44.6	74.7	82.7
25	23	Duke University	United States	78.1	76.2	95.7	99.6	68.0	82.6
=26	=24	Northwestern University	United States	71.7	80.7	97.5	85.0	67.0	82.1
=26	29	University of Washington	United States	71.6	82.8	98.9	53.9	63.0	82.1
28	28	Carnegie Mellon University	United States	65.4	81.8	98.7	55.2	80.1	81.1
29	=30	University of Edinburgh	United Kingdom	66.9	74.5	97.1	40.9	95.6	79.8
30	38	Technical University of Munich	Germany	69.8	82.2	84.5	100.0	77.7	79.3
31	=30	University of Hong Kong	Hong Kong	65.6	74.1	92.4	60.6	98.7	78.5
32	34	University of California, San Diego	United States	60.2	77.2	98.2	93.0	67.8	78.1
33	32	LMU Munich	Germany	67.3	78.3	87.4	100.0	70.5	77.7
34	33	University of Melbourne	Australia	67.1	75.9	85.8	78.1	93.6	77.6
35	=35	King's College London	United Kingdom	58.0	72.9	98.2	45.6	96.1	77.1
36	46	Nanyang Technological University, Singapore	Singapore	60.9	77.9	87.2	84.5	94.5	77.0
37	27	London School of Economics and Political Science	United Kingdom	59.2	74.3	95.1	37.8	92.8	76.5
38	45	Georgia Institute of Technology	United States	60.2	75.9	91.4	64.9	81.2	76.0
39	=35	The University of Tokyo	Japan	88.1	91.4	55.5	86.7	43.3	75.9
40	37	University of British Columbia	Canada	62.9	73.1	88.8	47.9	94.8	75.7
41	=40	École Polytechnique Fédérale de Lausanne	Switzerland	65.6	70.7	84.5	71.7	98.0	75.4
42	=42	KU Leuven	Belgium	59.7	74.9	86.7	99.2	76.8	74.6
43	=42	Heidelberg University	Germany	67.2	61.5	96.0	55.7	71.2	74.1
44	57	Monash University	Australia	56.9	68.7	90.4	78.4	91.0	73.6
45	49	Chinese University of Hong Kong	Hong Kong	59.1	61.1	95.7	60.9	92.5	73.2
46	44	McGill University	Canada	62.0	72.4	82.5	43.5	91.0	73.0
47	=40	Paris Sciences et Lettres – PSL Research University Paris	France	68.2	73.5	75.5	78.8	76.3	72.9
48	48	University of Illinois at Urbana-Champaign	United States	67.1	78.9	78.1	50.1	56.2	72.7
49	39	Karolinska Institute	Sweden	51.1	68.8	94.0	66.4	87.3	72.4
50	47	University of Texas at Austin	United States	66.2	73.1	87.5	51.3	40.1	72.3

Rank 2023	Rank 2022	Institution	Country/region	Teaching	Research	Citations	Industry income	International outlook	Overall score
51	60	Fudan University	China	71.8	75.8	74.5	77.3	45.2	72.0
52	84	Shanghai Jiao Tong University	China	75.3	82.9	59.9	100.0	43.7	71.2
53	=54	The University of Queensland	Australia	55.9	66.5	84.3	82.0	93.2	71.1
=54	50	University of Manchester	United Kingdom	54.5	63.7	91.3	45.3	92.7	70.9
=54	=58	University of Sydney	Australia	53.1	65.8	88.5	73.2	90.6	70.9
56	=54	Seoul National University	South Korea	75.2	76.2	67.6	96.6	35.9	70.8
57	51	Washington University in St Louis	United States	60.3	56.8	98.2	47.5	64.0	70.6
58	66	The Hong Kong University of Science and Technology	Hong Kong	51.4	63.4	87.7	95.0	97.7	70.5
59	53	Wageningen University & Research	Netherlands	50.4	60.2	93.2	100.0	88.8	70.3
60	65	University of Amsterdam	Netherlands	48.0	64.1	93.3	44.4	91.9	69.6
61	64	Brown University	United States	64.5	58.0	89.5	39.0	63.3	69.3
62	=54	Australian National University	Australia	51.3	69.2	81.8	45.6	96.0	69.0
63	67	University of California, Davis	United States	59.7	66.3	80.9	52.4	68.7	68.5
64	68	University of California, Santa Barbara	United States	44.6	61.5	96.2	80.1	76.0	68.4
65	63	University of Southern California	United States	58.9	58.6	90.4	43.8	63.7	68.3
66	69	Utrecht University	Netherlands	44.3	66.0	91.2	72.7	78.8	68.2
67	=75	Zhejiang University	China	67.3	74.8	62.8	100.0	55.1	68.1
68	61	Kyoto University	Japan	77.5	79.1	52.3	88.6	40.5	68.0
69	52	University of North Carolina at Chapel Hill	United States	58.9	59.7	93.3	46.0	41.7	67.8
70	=75	Delft University of Technology	Netherlands	58.8	76.4	59.1	93.4	94.2	67.7
=71	62	Boston University	United States	55.9	56.1	92.9	41.1	65.9	67.5
=71	70	UNSW Sydney	Australia	51.1	59.0	85.9	63.5	95.1	67.5
73	73	Charité – Universitätsmedizin Berlin	Germany	48.5	52.2	98.8	87.1	69.3	67.2
74	=88	University of Science and Technology of China	China	65.0	64.9	78.8	69.4	36.9	67.1
75	=80	University of Groningen	Netherlands	45.4	57.6	90.4	75.8	89.8	66.6
76	92	University of Bristol	United Kingdom	43.8	53.4	98.6	43.5	89.4	66.5
77	71	Leiden University	Netherlands	43.2	64.4	86.6	68.4	85.4	66.4
78	=151	Yonsei University (Seoul campus)	South Korea	67.0	68.9	63.9	94.8	52.8	66.3
79	91	Hong Kong Polytechnic University	Hong Kong	46.6	57.0	86.7	56.0	97.6	65.8
80	72	Erasmus University Rotterdam	Netherlands	38.6	57.1	95.6	64.4	89.7	65.7
81	=58	University of Wisconsin-Madison	United States	59.7	62.9	78.7	48.4	51.8	65.5
=82	82	Emory University	United States	54.8	46.0	98.0	48.6	59.8	65.3
=82	=86	University of Glasgow	United Kingdom	43.3	50.8	96.5	41.9	93.8	65.3
=82	=75	University of Zurich	Switzerland	51.5	50.7	87.5	57.6	93.0	65.3
85	=80	McMaster University	Canada	42.7	51.1	94.6	89.9	84.7	65.1
=86	74	Humboldt University of Berlin	Germany	55.2	64.3	75.6	42.8	70.5	64.9
=86	=78	University of Tübingen	Germany	51.1	58.2	84.5	79.9	64.1	64.9
88	111	University of Adelaide	Australia	42.7	51.8	92.2	65.3	93.6	64.7
89	112	University of Bonn	Germany	51.6	56.1	86.0	55.0	68.7	64.6
90	=88	Sorbonne University	France	58.7	58.3	76.6	40.0	72.3	64.5
=91	83	Free University of Berlin	Germany	54.2	62.4	74.8	41.7	76.4	64.2
=91	=99	Korea Advanced Institute of Science and Technology (KAIST)	South Korea	64.5	66.0	65.7	100.0	38.2	64.2
93	=117	Université Paris-Saclay	France	56.7	55.2	79.1	54.6	69.7	63.9
94	=101	University of Bern	Switzerland	46.0	46.5	90.7	86.3	88.2	63.7
=95	98	University of California, Irvine	United States	43.5	51.6	93.6	59.4	73.2	63.6
=95	91	Institut Polytechnique de Paris	France	58.5	58.8	64.8	72.7	95.6	63.6
=95	=105	Nanjing University	China	58.4	58.2	74.3	87.3	55.2	63.6
98	=113	Vanderbilt University	United States	49.5	47.5	96.5	66.7	50.6	63.5
=99	=151	City University of Hong Kong	Hong Kong	47.2	53.0	79.9	76.6	99.6	63.4
=99	=108	RWTH Aachen University	Germany	56.8	64.5	66.1	93.8	65.1	63.4

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=101	103	University of Basel	Switzerland	47.0	44.1	86.5	99.2	96.8	63.0
=101	=190	King Abdulaziz University	Saudi Arabia	51.7	36.7	91.9	74.2	93.6	63.0
=101	=86	University of Minnesota	United States	55.1	56.9	81.2	77.8	41.7	63.0
=104	=93	University of Maryland, College Park	United States	48.1	57.7	89.7	40.0	42.6	62.9
=104	=78	University of Warwick	United Kingdom	44.8	49.6	88.1	42.7	94.9	62.9
106	=93	Michigan State University	United States	56.2	55.6	78.8	39.9	61.9	62.8
107	=96	Ghent University	Belgium	48.6	60.1	77.8	80.0	63.9	62.7
=108	=105	University of Birmingham	United Kingdom	40.5	46.2	95.2	42.3	92.2	62.6
=108	124	University of Southampton	United Kingdom	41.4	47.5	92.3	44.1	94.6	62.6
110	=101	University of Helsinki	Finland	45.9	58.5	86.6	39.1	57.0	62.5
111	=88	University of Montreal	Canada	50.9	53.2	75.8	76.5	85.5	62.3
112	85	Ohio State University (Main campus)	United States	53.0	51.2	83.4	55.3	60.3	62.2
113	=108	University of Freiburg	Germany	47.8	52.8	80.8	96.2	67.3	61.9
=114	=96	University of Copenhagen	Denmark	45.1	47.5	87.2	55.0	84.7	61.7
=114	155	Université Paris Cité	France	51.5	44.8	89.3	37.3	68.3	61.7
=114	110	University of Sheffield	United Kingdom	43.6	46.4	89.5	47.4	88.5	61.7
117	104	Aarhus University	Denmark	40.6	60.0	77.6	74.1	77.9	61.2
118	125	University of Alberta	Canada	48.8	52.7	72.9	82.7	89.2	61.1
=119	=119	University of Göttingen	Germany	46.3	53.8	83.9	40.1	63.0	61.0
=119	116	Lund University	Sweden	40.5	55.5	81.0	79.5	78.5	61.0
121	115	Vrije Universiteit Amsterdam	Netherlands	38.4	52.2	87.5	59.1	79.4	60.9
122	=122	Lancaster University	United Kingdom	38.7	40.0	96.9	38.3	94.9	60.8
123	=99	Dartmouth College	United States	59.8	40.4	88.2	40.0	42.0	60.7
=124	=117	Queen Mary University of London	United Kingdom	34.3	41.3	97.7	44.0	97.1	60.4
=124	=137	University of Vienna	Austria	49.4	59.3	65.1	44.8	95.8	60.4
126	=119	University of Oslo	Norway	40.1	48.5	89.0	44.5	77.0	60.2
127	=105	Purdue University West Lafayette	United States	55.9	64.2	56.9	67.8	71.1	60.1
=128	=132	University of Hamburg	Germany	46.5	54.4	75.4	96.1	60.4	59.8
=128	=127	University of Leeds	United Kingdom	46.0	47.8	79.3	40.5	91.8	59.8
130	141	University of Nottingham	United Kingdom	41.8	44.1	86.6	41.7	90.4	59.6
=131	=143	University of Antwerp	Belgium	36.4	46.2	90.4	83.5	71.8	59.4
=131	=132	The University of Western Australia	Australia	34.9	48.1	85.6	69.2	94.4	59.4
133	=143	University of Technology Sydney	Australia	36.9	42.1	90.5	49.7	96.0	59.3
134	126	Case Western Reserve University	United States	48.4	40.6	90.7	43.4	52.9	59.0
135	=176	University of Lausanne	Switzerland	35.8	47.6	83.0	72.3	92.3	58.7
136	130	Georgetown University	United States	55.5	35.0	88.0	54.0	49.1	58.6
=137	=143	University of Exeter	United Kingdom	32.4	41.3	94.8	39.2	92.7	58.5
=137	=162	University of Ottawa	Canada	41.7	45.4	82.6	51.0	84.1	58.5
=139	=137	University of Auckland	New Zealand	36.8	44.3	85.4	56.4	94.3	58.4
=139	=146	Newcastle University	United Kingdom	33.3	40.0	96.0	41.8	87.8	58.4
=139	139	Radboud University Nijmegen	Netherlands	34.9	51.6	85.5	48.0	74.7	58.4
=139	165	University of Würzburg	Germany	40.7	45.2	87.8	79.4	57.3	58.4
=139	169	University of York	United Kingdom	39.3	44.0	85.9	38.4	88.7	58.4
144	140	University of Pittsburgh-Pittsburgh campus	United States	46.2	42.9	90.6	44.2	43.4	58.3
145	=127	Maastricht University	Netherlands	38.4	49.6	75.5	73.2	98.1	58.2
146	=172	University of Cologne	Germany	44.5	46.5	80.0	77.3	64.4	58.0
147	136	Rice University	United States	46.5	39.7	84.4	44.5	75.3	57.9
=148	=158	University of Colorado Boulder	United States	45.6	46.3	85.5	44.6	45.6	57.8
=148	=146	Ulm University	Germany	41.6	41.2	89.3	77.6	56.1	57.8
=148	131	Uppsala University	Sweden	37.6	55.7	75.2	71.5	72.6	57.8

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Universitas Indonesia synergizes excellently with various industries through efforts to support breakthroughs in innovations, inventions, and ideas for the needs of industry and society. In 2022, Universitas Indonesia has successfully obtained 267 patents.

UI researchers developed a Pneumatic System Based Low-Cost Local Transport Ventilator (COVENT-20)

Universitas Indonesia has developed several electric vehicles, one of which is an electric bus

Established in 1849, Universitas Indonesia is the oldest state-run university in Indonesia located in Depok, West Java and Jakarta. Many of the Nation's top academics, technocrats, and intellectuals have graduated from Universitas Indonesia. Research and works produced by the academic society of Universitas Indonesia have also provided numerous solutions for the challenges faced by Indonesia and beyond

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Rank 2023	Rank 2022	Institution	Country/region	Teaching	Research	Citations	Industry income	International outlook	Overall score
=151	154	University of Florida	United States	55.0	58.7	64.2	51.4	41.4	57.7
=151	=119	Penn State (Main campus)	United States	47.8	53.8	75.2	41.6	48.3	57.7
=151	=172	Tufts University	United States	47.1	36.7	92.2	43.4	51.4	57.7
154	142	University of Rochester	United States	42.0	40.5	87.0	49.3	73.8	57.6
155	201–250	KTH Royal Institute of Technology	Sweden	43.5	53.8	68.4	68.1	81.1	57.5
=156	=132	Arizona State University (Tempe)	United States	44.8	47.9	79.6	40.2	62.5	57.4
=156	139	Technical University of Berlin	Germany	48.8	55.7	62.0	92.6	67.8	57.4
=156	=172	TU Dresden	Germany	48.8	50.7	69.1	92.4	60.5	57.4
=156	=127	University of Virginia (Main campus)	United States	48.1	39.8	86.6	45.8	52.5	57.4
160	=183	University of Cape Town	South Africa	33.9	43.8	88.7	53.3	78.8	57.2
=161	=172	University of Bologna	Italy	52.1	40.8	80.2	46.4	51.6	57.0
=161	=146	Trinity College Dublin	Ireland	36.0	47.3	79.4	47.1	93.7	57.0
=163	=185	University of Leicester	United Kingdom	31.4	32.9	98.7	41.9	92.5	56.9
=163	=158	Lomonosov Moscow State University	Russian Federation	81.0	72.9	9.3	99.1	72.4	56.9
=163	=185	Pohang University of Science and Technology (POSTECH)	South Korea	54.7	51.4	67.7	96.2	31.8	56.9
=166	=162	Southern University of Science and Technology (SUSTech)	China	29.8	42.9	95.5	77.9	59.0	56.8
=166	=185	Technical University of Denmark	Denmark	40.4	44.9	73.2	86.0	94.0	56.8
=168	196	Medical University of Graz	Austria	29.4	34.4	96.8	98.1	79.0	56.6
=168	168	Northeastern University, US	United States	39.9	30.2	96.2	40.1	76.3	56.6
=170	167	Indiana University	United States	45.5	39.4	85.5	53.6	54.3	56.5
=170	=158	Université Catholique de Louvain	Belgium	39.9	50.4	72.8	57.7	82.3	56.5
=170	=122	Sungkyunkwan University (SKKU)	South Korea	52.8	54.0	59.4	98.3	56.4	56.5
173	157	Wuhan University	China	43.5	40.5	89.2	69.4	35.3	56.4
174	=178	Ulsan National Institute of Science and Technology (UNIST)	South Korea	41.3	42.0	85.9	89.9	43.7	56.3
175	192	Macquarie University	Australia	38.7	44.6	76.1	64.9	89.8	56.2
=176	181	Huazhong University of Science and Technology	China	42.2	42.6	88.8	83.2	25.5	56.1
=176	=178	University of Liverpool	United Kingdom	33.2	37.7	89.4	39.6	94.1	56.1
=176	=176	Stockholm University	Sweden	29.7	50.4	87.1	38.3	66.3	56.1
179	=146	University of Mannheim	Germany	40.0	48.2	79.0	61.0	57.4	56.0
180	150	University of Arizona	United States	45.8	47.0	78.7	52.1	41.3	55.9
181	=193	Texas A&M University	United States	50.2	54.8	63.2	45.1	56.0	55.8
182	=193	University of Barcelona	Spain	33.1	43.4	89.9	50.2	59.9	55.7
=183	=170	Autonomous University of Barcelona	Spain	35.1	38.8	91.1	43.0	67.1	55.6
=183	=197	Scuola Normale Superiore di Pisa	Italy	56.7	36.5	74.8	38.2	56.4	55.6
185	201–250	University of Münster	Germany	43.4	43.9	81.4	48.9	49.2	55.5
186	156	Pompeu Fabra University	Spain	32.6	39.4	91.5	46.2	68.9	55.4
=187	189	Cardiff University	United Kingdom	31.1	38.9	88.5	41.5	88.3	55.2
=187	=113	National Taiwan University (NTU)	Taiwan	50.2	55.5	60.1	75.1	47.2	55.2
=189	201–250	Friedrich Schiller University Jena	Germany	42.4	39.9	81.3	49.7	62.8	55.0
=189	180	Karlsruhe Institute of Technology	Germany	46.7	54.2	57.8	89.7	68.6	55.0
191	201–250	University of Massachusetts	United States	41.2	33.5	87.8	51.7	65.0	54.9
=192	=158	University of Aberdeen	United Kingdom	30.7	34.1	89.8	47.5	95.9	54.8
=192	201–250	University of California, Santa Cruz	United States	32.6	33.3	95.9	46.2	67.9	54.8
=194	201–250	Medical University of Vienna	Austria	35.0	27.6	94.0	61.2	81.7	54.6
=194	201–250	University of Miami	United States	48.4	33.5	81.0	48.3	60.2	54.6
=196	=197	University of Erlangen-Nuremberg	Germany	44.6	47.5	68.8	90.7	53.5	54.5
=196	401–500	Sichuan University	China	57.1	58.6	48.6	93.4	38.7	54.5
=198	=162	Durham University	United Kingdom	40.0	44.6	70.0	39.4	94.3	54.4
=198	201–250	Queen's University Belfast	United Kingdom	31.1	37.9	84.4	41.6	97.4	54.4
=198	201–250	University of Reading	United Kingdom	36.5	39.6	78.5	42.2	93.3	54.4

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After boosters, it's back to earth

The pandemic raised academia's profile, but can universities maintain their gains in esteem and industry and government support? Pola Lem reports

Months into the pandemic, academics were thrust into the public eye like never before. Some of them became household names, while others forged new relationships with government and industry, securing multimillion-dollar grants to develop vaccines and reliable coronavirus tests.

At the time, many in academia predicted that Covid-19 would be a game-changer for university relations with the public, governments and the private sector. But two and a half years later, have their hopes been met? And how can institutions keep leveraging positive sentiment to achieve long-lasting visibility, grow collaborations and attract research funding?

University leaders and communications experts speaking with *Times Higher Education* agree that positive predictions made early in the pandemic have largely been borne out.

"A rising tide lifts all boats," agrees Tania Rhodes-Taylor, chief executive and founder of the education consultancy Otus Advisory.

"Universities are very complex organisations…a lot of what they do is difficult to make relevant to the population as a whole or urgent to government, and we had this situation that what universities do was suddenly relevant to everyone," she says.

Rhodes-Taylor credits institutions' proactiveness and agility with "adding to their capital", particularly as "that's not something people expected".

Data lend credence to the argument. A November 2021 study by the World 100 higher education consultancy found that 46 per cent of roughly 5,000 members of the public surveyed around the world recognised that universities had played an "important" or "very important" role in the pandemic. Meanwhile, nearly all the communications directors surveyed believed that their university had managed to leverage their reputational boost from pandemic-related research.

While universities focused on getting accurate science to the general public, many also made important gains in building relationships with government and industry.

Fiona Fox, chief executive of the UK-based Science Media Centre, a non-profit organisation that promotes the use of informed science in the press, noticed a distinct change in industry engagement at its events.

"Until the pandemic, it was almost impossible to get scientists from companies on our panels," says Fox. "We ran 200 press briefings during the pandemic…and we would say, 'can we have the director of research from a company', and they would say 'yes'. We haven't had that 'yes' before."

At Imperial College London, which claims to lead the UK sector in industry engagement, the pandemic has enabled new pharmaceutical and medical technology spin-outs and has "given us a profile whereby even our major partners are considering increasing their activity with us", says the institution's provost, Ian Walmsley.

Still, the extent of gains vis-à-vis partnerships with industry vary widely by institution – and companies' views of academia appear to be unchanged. Mark Sudbury, head of World 100 (part of *THE*), says a survey that it conducted did not show "any significant change or uplift in the perception businesses have of universities", which may relate to the fact that most companies are moved less by institutional image than they are by interactions with academics on specific collaborations.

But has the pandemic created tangible gains for universities in the form of government

GETTY/ISTOCK MONTAGE

relationships or grants?

Walter Ricciardi, Italy's top Covid-19 expert and a professor of hygiene and public health at Università Cattolica del Sacro Cuore, Rome, tells *THE* that the development of closer relationships with policymakers "still much relies on specific academics that are consulting for the government".

But he does note financial gains, with Italian universities benefiting from the European Union's Recovery and Resilience Facility, worth more than €723 billion (£608 billion).

"In Italy, an important part of this money has been allocated to research and in particular to academic research – so there's concrete benefit deriving from money," Ricciardi says.

The University of Oxford, arguably the UK's most visible institution thanks to its work developing a Covid-19 vaccine, has established an interdisciplinary Pandemic Sciences Institute by raising private funds and securing a financial commitment from the UK government. Dame Louise Richardson, Oxford's vice-chancellor, says the institute will allow the university to pull in humanities research on questions including how to address vaccine hesitancy.

"It's going to enable us to retain the various wonderful scientists we have doing research on pandemics, and also serve as a magnet for other scientists from around the world," she says.

But despite the already palpable benefits for institutions, analysts cautioned against complacency.

According to Sudbury, 12 months after conducting the research for the World 100 study measuring universities' reputation boost, institutions' reputation gains may be tapering off as society exits the "acute phase" of the pandemic.

"My reflection a year on is that, actually, it's been a lot more difficult to sustain those benefits," he says, noting that other emerging crises – such as the war in Ukraine – have not allowed universities and academic experts to shine in the same way as they did during the pandemic.

"We shouldn't get sucked into the idea that, because people could see what [institutions] did during Covid, that has transformed the way people see universities," he cautions.

So far, it appears that university heads are keeping their eye on the ball.

Ron Daniels, president of Johns Hopkins University, says that universities' work on Covid made a "demonstrable impact" and that "people took notice". But, he is quick to add, "we cannot rest on our laurels".

Walmsley, who is chair of experimental physics as well as provost at Imperial, agrees.

"It is certainly incumbent upon us to be clear in our own statements and narratives on how we helped to benefit society," including the "less direct" benefits tied to universities' mission of educating students, he says.

Yet despite some leaders' clear appreciation of the value of research communications, at many universities, persuading administrators that they must invest in the area continues to be an uphill battle.

"It feels like sometimes science press officers have to fight to convince people that what they're doing is contributing to reputation – rather than being a self-indulgent thing on the side," says the Science Media Centre's Fox.

She attributes some institutions' struggles to capitalise on reputation gains to understaffed communications departments and leadership "preoccupied" with a host of other issues: "a dramatic rise in number of students, tax on universities from governments, fees, overseas students".

"Universities were pulled away from the awareness-raising – that's really the lesson," she says.

Otus Advisory's Rhodes-Taylor also argues for a more methodical approach.

"Universities have to be seen as at the centre of the solution, not at the periphery – they can't retreat, they need to stay there; but you need people who can maintain that engagement. You can't expect academics to do their day job as currently defined and also engage."

She cautions against the temptation for communications to "boil the ocean", ensuring that every single person connects a research finding with an institution. Instead, communicators should focus on reaching specific target audiences, and do so in a scientific way.

"Outreach needs to be thought about, invested in, curated, measured. Just doing it isn't enough," she says.

World 100's Sudbury, too, stresses the need for universities to "get cleverer" about content curation. Beyond simply aggregating press clippings, teams should be thinking about tailored products that they can create, such as subject-specific podcasts or weekly newsletters geared at target audiences, he says.

Equally, universities need to do more to support their scholars to engage with the public, including protecting high-profile academics who have raised university profiles at the cost of attracting online abuse, analysts say.

In coming years, as older lecturers leave the workforce and are replaced by younger researchers more comfortable discussing their work online, there will likely be more direct engagement between scholars and the public. If universities want their message to resonate, part of the key may be relinquishing some control, allowing academics to take initiative and not seeking to tidy up individual researchers' messages too much, says Sudbury.

"The age of everything being driven by university press release is gone," he says. "I think communications teams have to be realistic – you can't control all of that, and it doesn't make sense to control it." ●

> " Universities were pulled away from the awareness-raising – that's the lesson "

ZHEJIANG UNIVERSITY

The ethos of seeking truth and pursuing innovation has been embedded in the culture of ZJU since its foundation in 1897. Building on successes over the course of 125 years, ZJU is striving to maximize its positive impact on the world together with its partners by solving pressing global challenges, enhancing dialogue among cultures and nurturing thoughtful leaders and innovators for a sustainable future.

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Creating a global university to shape a better world

China's Zhejiang University has prioritised strategic global initiatives for several years, fostering international engagement among students and academics

CHEN LIHUA

Higher education institutions cannot take a purely internal view of their achievements. They play a key role in cross-border innovation, drawing students and faculty members from across the globe. In recognising this, international engagement has long been central to Zhejiang University's (ZJU) strategy, which aims to create a genuinely global institution that remains rooted in China's educational ecosystem.

In 2017, ZJU began to refine its strategic global priorities. After a series of surveys and interviews with faculty, students, executives and alumni, ZJU published "Global ZJU: CREATE to impact", a new global strategy underpinned by the six pillars of culture, research, education, administration, talent and engagement. "ZJU has continued to forge links with global partners," says Li Min, director of ZJU's office of global engagement. "In the past five years, we've established a close and diversified network that has helped foster education and research collaboration across the globe."

Recently, ZJU released its refreshed global strategy, seeking to maximise the university's impact on the world stage. The strategy, Global ZJU 2.0, is expected to serve as a compass and blueprint for ZJU to navigate a world that is more complex and interdependent than ever before. "We will continue to deliver gold-standard education to nurture globally competent students and become a more influential hub for international education," says He Lianzhen, vice-president of ZJU and one of the founders of Global ZJU 2.0. "We will strive to recruit and retain the most talented faculty from around the world, enabling them to thrive in their careers. We will also seek to shape the agenda on global issues by advancing a broad range of meaningful, multi-layered global networks."

In March 2021, 61 university presidents from 31 countries and regions signed the Joint Statement of Global University Leaders on the 2030 Agenda for Sustainable Development, pledging to work together to realise the UN's Sustainable Development Goals. ZJU hosted an online forum, titled "The Role of Universities in the 2030 Agenda", where the initiative was announced. The forum was just one aspect of ZJU's sustainability action plan. The "Global ZJU for Social Good" initiative, designed to improve sustainability-related education, research and practices within the ZJU community aims to reach stakeholders in China and beyond.

"I'm both a witness and participant in ZJU's ever-expanding global engagement," says Wu Dan from ZJU's college of biomedical engineering and

YAN JUNHAO

instrument science. "I'm but one of many young scholars at ZJU who are motivated to be engaged in international collaboration to address problems shared by the global community."

To facilitate international collaboration, ZJU organises an annual series of seminars and forums, including the Sino-German Sustainable Development Forum and the Asia-Pacific Carbon Neutrality Symposium. These events bring together global experts from academia, government and the private sector, highlighting a multi-stakeholder approach to regional and global development challenges.

"ZJU's global partnership network has brought abundant opportunities to its students, helping them become future leaders and citizens with a global vision and social responsibility," Min says. "Currently, over 600 international education programmes, including nearly 80 joint and dual-degree programmes, are on offer at the university."

As ZJU engages with multiple stakeholders in response to the 2030 Agenda, it has launched its SDG Summer School, bringing together around 1,000 talented young students from more than 80 countries. "As a responsible, leading university, we want to maximise the university's positive impact on the youth and the world, together with our global partners," said Wu Zhaohui, president of ZJU, at the summer school's opening ceremony.

To find out more about Zhejiang University, visit www.zju.edu.cn/english/

Rank 2023	Rank 2022	Institution	Country/region	Teaching	Research	Citations	Industry income	International outlook	Overall score
201–250	201–250	Aalto University	Finland	38.3	40.4	67.5	53.2	81.9	51.2–54.3
	201–250	University of Bergen	Norway	30.2	32.7	85.7	41.7	76.4	51.2–54.3
	166	Bielefeld University	Germany	33.1	42.4	84.2	42.9	48.5	51.2–54.3
	201–250	University of Calgary	Canada	36.8	40.2	75.9	61.6	79.9	51.2–54.3
	251–300	Curtin University	Australia	26.5	33.5	83.0	48.5	95.2	51.2–54.3
	201–250	University of Dundee	United Kingdom	25.8	30.5	90.3	49.5	85.4	51.2–54.3
	182	University of East Anglia	United Kingdom	27.0	29.7	95.0	37.7	86.4	51.2–54.3
	201–250	Eindhoven University of Technology	Netherlands	45.5	49.8	55.5	99.2	86.4	51.2–54.3
	=197	University of Geneva	Switzerland	34.7	35.4	81.8	48.2	98.6	51.2–54.3
	201–250	George Washington University	United States	47.0	32.8	83.2	38.7	56.9	51.2–54.3
	=185	University of Gothenburg	Sweden	29.3	43.6	87.9	47.1	65.1	51.2–54.3
	=197	University of Hohenheim	Germany	33.6	32.2	95.2	49.6	55.8	51.2–54.3
	NR	Humanitas University	Italy	28.3	28.8	99.7	39.4	62.9	51.2–54.3
	351–400	King Fahd University of Petroleum and Minerals	Saudi Arabia	31.4	35.9	80.3	91.8	76.7	51.2–54.3
	201–250	University of Konstanz	Germany	42.0	46.4	62.9	62.6	67.9	51.2–54.3
	201–250	Korea University	South Korea	46.8	48.7	61.5	95.3	55.8	51.2–54.3
	201–250	Université Libre de Bruxelles	Belgium	32.6	44.1	77.3	44.8	88.9	51.2–54.3
	251–300	University of Luxembourg	Luxembourg	38.2	39.8	64.5	51.2	99.4	51.2–54.3
	201–250	University of Macau	Macao	31.6	36.0	78.5	44.2	99.3	51.2–54.3
	251–300	Macau University of Science and Technology	Macao	35.4	30.7	79.2	50.1	99.7	51.2–54.3
	201–250	Medical University of Innsbruck	Austria	29.9	30.2	88.8	95.3	88.4	51.2–54.3
	201–250	Moscow Institute of Physics and Technology (MIPT)	Russian Federation	55.7	46.8	51.4	99.1	62.2	51.2–54.3
	251–300	University of Newcastle	Australia	30.0	35.8	79.3	61.9	84.3	51.2–54.3
	=183	University of Notre Dame	United States	51.0	40.5	67.7	39.7	59.3	51.2–54.3
	201–250	University of Padua	Italy	47.2	36.5	80.9	46.4	49.3	51.2–54.3
	251–300	University of Potsdam	Germany	39.2	44.6	70.4	60.2	59.6	51.2–54.3
	301–350	Qatar University	Qatar	27.0	38.7	79.6	61.4	98.9	51.2–54.3
	=193	Queensland University of Technology	Australia	29.2	39.7	86.0	50.1	83.9	51.2–54.3
	201–250	RCSI University of Medicine and Health Sciences	Ireland	31.4	37.3	76.9	50.7	94.7	51.2–54.3
	=190	Rutgers University – New Brunswick	United States	43.5	43.6	73.0	43.1	53.9	51.2–54.3
	201–250	St George's, University of London	United Kingdom	20.4	28.3	99.9	40.5	74.9	51.2–54.3
	201–250	Sant'Anna School of Advanced Studies – Pisa	Italy	43.3	40.2	69.4	81.0	56.7	51.2–54.3
	201–250	University of São Paulo	Brazil	54.5	61.5	43.3	43.0	37.2	51.2–54.3
	=197	Sapienza University of Rome	Italy	52.4	44.9	67.7	53.0	43.5	51.2–54.3
	251–300	Semmelweis University	Hungary	44.7	18.0	87.9	43.3	77.1	51.2–54.3
	201–250	University of South Florida	United States	31.1	36.9	85.1	85.0	56.2	51.2–54.3
	201–250	University of St Andrews	United Kingdom	40.0	41.4	67.8	38.9	94.9	51.2–54.3
	201–250	University of Surrey	United Kingdom	31.3	33.9	79.5	45.8	94.8	51.2–54.3
	=151	University of Sussex	United Kingdom	28.0	34.2	89.0	39.0	93.1	51.2–54.3
	301–350	Università della Svizzera italiana	Switzerland	28.0	23.3	91.4	55.7	99.5	51.2–54.3
	251–300	University of Tartu	Estonia	26.8	33.1	92.4	45.6	65.4	51.2–54.3
	201–250	Tel Aviv University	Israel	39.4	51.2	72.0	43.8	56.0	51.2–54.3
	201–250	Tohoku University	Japan	59.1	62.3	36.8	94.5	51.1	51.2–54.3
	201–250	University College Dublin	Ireland	32.6	40.3	73.9	46.9	94.2	51.2–54.3
	201–250	Vita-Salute San Raffaele University	Italy	37.6	27.8	99.7	38.2	45.2	51.2–54.3
	251–300	Vrije Universiteit Brussel	Belgium	36.6	43.6	67.4	60.1	77.3	51.2–54.3
	201–250	University of Waterloo	Canada	36.8	46.4	71.0	47.3	87.5	51.2–54.3
	201–250	Western University	Canada	40.7	42.1	67.9	79.9	85.6	51.2–54.3
	201–250	Western Sydney University	Australia	25.8	31.7	87.6	44.1	87.9	51.2–54.3
	201–250	University of Wollongong	Australia	31.4	38.2	74.8	57.2	94.0	51.2–54.3

Rank 2023	Rank 2022	Institution	Country/region	Teaching	Research	Citations	Industry income	International outlook	Overall score
251–300	201–250	Aalborg University	Denmark	29.5	43.3	73.2	51.5	76.4	48.9–51.1
	201–250	Auckland University of Technology	New Zealand	20.8	21.3	97.4	39.4	96.4	48.9–51.1
	251–300	Australian Catholic University	Australia	18.3	25.9	98.3	38.4	79.9	48.9–51.1
	201–250	University of Bath	United Kingdom	32.2	33.8	73.8	39.9	93.4	48.9–51.1
	251–300	Beijing Normal University	China	50.7	43.8	59.5	64.3	41.4	48.9–51.1
	501–600	Bond University	Australia	21.6	21.8	99.9	38.3	81.8	48.9–51.1
	251–300	Boston College	United States	48.6	31.5	74.9	37.4	48.5	48.9–51.1
	351–400	Bournemouth University	United Kingdom	32.6	20.7	88.4	37.5	84.0	48.9–51.1
	201–250	Brighton and Sussex Medical School	United Kingdom	15.7	25.4	99.8	36.9	81.1	48.9–51.1
	251–300	University of California, Riverside	United States	33.0	32.7	81.4	41.7	65.3	48.9–51.1
	=170	University of Canberra	Australia	20.0	32.0	92.6	43.0	88.1	48.9–51.1
	251–300	Chalmers University of Technology	Sweden	34.9	44.5	64.4	66.0	77.4	48.9–51.1
	301–350	China Medical University, Taiwan	Taiwan	24.1	32.0	92.8	93.1	47.6	48.9–51.1
	201–250	Copenhagen Business School	Denmark	21.5	31.0	90.9	43.9	93.6	48.9–51.1
	251–300	Deakin University	Australia	25.0	33.0	83.2	44.6	88.7	48.9–51.1
	251–300	University of Duisburg-Essen	Germany	34.0	35.5	79.9	64.5	60.9	48.9–51.1
	251–300	Heinrich Heine University Düsseldorf	Germany	34.7	32.3	80.1	44.1	59.3	48.9–51.1
	251–300	École des Ponts ParisTech	France	34.4	29.4	79.5	50.1	83.6	48.9–51.1
	301–350	Goethe University Frankfurt	Germany	33.7	32.9	76.4	44.8	65.6	48.9–51.1
	201–250	Griffith University	Australia	27.1	35.8	76.4	52.8	83.2	48.9–51.1
	251–300	University of Hawai'i at Mānoa	United States	39.8	41.7	66.0	40.4	66.9	48.9–51.1
	301–350	Hebrew University of Jerusalem	Israel	42.1	41.8	65.3	42.8	59.5	48.9–51.1
	301–350	University of Illinois at Chicago	United States	43.0	32.4	74.6	45.4	53.1	48.9–51.1
	301–350	Indian Institute of Science	India	60.5	56.9	33.1	80.1	28.0	48.9–51.1
	301–350	Johannes Gutenberg University of Mainz	Germany	36.7	28.8	80.5	57.6	58.5	48.9–51.1
	251–300	University of Kiel	Germany	31.5	32.7	84.5	36.9	57.1	48.9–51.1
	351–400	King Saud University	Saudi Arabia	27.0	32.9	76.3	86.3	85.4	48.9–51.1
	251–300	Kyung Hee University	South Korea	37.4	41.8	62.9	89.6	67.8	48.9–51.1
	201–250	La Trobe University	Australia	25.9	32.9	83.2	51.8	88.4	48.9–51.1
	251–300	Université Laval	Canada	40.1	35.8	67.8	68.7	72.4	48.9–51.1
	251–300	Linköping University	Sweden	23.5	39.8	78.0	61.8	70.8	48.9–51.1
	251–300	University of Navarra	Spain	30.7	30.3	84.7	66.2	72.5	48.9–51.1
	251–300	Oregon Health and Science University	United States	36.4	19.8	99.4	52.0	29.4	48.9–51.1
	301–350	Osaka University	Japan	54.3	60.9	31.8	96.4	42.2	48.9–51.1
	351–400	University of Pavia	Italy	38.6	33.7	75.0	46.5	47.2	48.9–51.1
	251–300	Queen's University	Canada	39.9	38.0	60.9	72.0	72.7	48.9–51.1
	251–300	Ruhr University Bochum	Germany	40.4	47.2	57.6	52.3	54.1	48.9–51.1
	251–300	Sejong University	South Korea	27.3	29.3	93.8	55.6	58.8	48.9–51.1
	401–500	University of Sharjah	United Arab Emirates	20.5	21.3	96.8	41.4	99.3	48.9–51.1
	201–250	Simon Fraser University	Canada	27.8	36.8	76.3	52.0	92.0	48.9–51.1
	251–300	University of Southern Denmark	Denmark	24.7	32.4	85.3	72.3	78.9	48.9–51.1
	251–300	Stellenbosch University	South Africa	30.5	36.9	82.2	71.0	54.0	48.9–51.1
	251–300	Sun Yat-sen University	China	44.9	37.4	74.8	59.3	31.3	48.9–51.1
	251–300	Swansea University	United Kingdom	24.9	28.2	91.5	39.3	83.6	48.9–51.1
	201–250	Tilburg University	Netherlands	34.3	46.6	61.7	50.6	84.5	48.9–51.1
	301–350	Tongji University	China	43.4	52.3	46.1	97.8	53.1	48.9–51.1
	201–250	University of Twente	Netherlands	34.3	46.4	57.2	80.5	94.5	48.9–51.1
	351–400	United Arab Emirates University	United Arab Emirates	24.7	29.8	82.3	72.5	88.8	48.9–51.1
	251–300	University of Utah	United States	39.9	34.9	81.7	57.5	33.9	48.9–51.1
	251–300	Virginia Polytechnic Institute and State University	United States	39.3	36.2	73.7	47.4	56.8	48.9–51.1
	251–300	University of the Witwatersrand	South Africa	31.5	44.3	67.9	100.0	73.1	48.9–51.1

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THE AWARDS ASIA 2022

Shortlisted in two categories:
LEADERSHIP AND MANAGEMENT TEAM OF THE YEAR
and WORKPLACE OF THE YEAR

THE IMPACT RANKINGS 2022

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and **201-300** worldwide

THE ARAB UNIVERSITY RANKINGS 2021

#1 Research Citations in the Arab Region

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and **101-200** worldwide
on **SDG 5
Gender Equality**

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in Saudi Arabia
and **93** worldwide
on **SDG 8
Decent Work and
Economic Growth**

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in Saudi Arabia
and **201-300** worldwide
on **SDG 16
Peace, Justice, and
Strong Institutions**

Ranked **2nd**
in Saudi Arabia
and **100** worldwide
on **SDG 17
Partnerships for the
Goals**

Rank 2023	Rank 2022	Institution	Country/region	Teaching	Research	Citations	Industry income	International outlook	Overall score
301–350	NR	Abu Dhabi University	United Arab Emirates	32.3	15.4	83.1	36.9	98.5	47.0–48.7
	301–350	Aix-Marseille University	France	40.5	24.9	72.3	41.5	63.2	47.0–48.7
	201–250	Alfaisal University	Saudi Arabia	20.2	22.1	91.6	43.4	96.7	47.0–48.7
	301–350	Anglia Ruskin University (ARU)	United Kingdom	18.2	16.3	99.0	37.2	91.1	47.0–48.7
	301–350	Autonomous University of Madrid	Spain	31.3	31.2	80.8	40.0	51.2	47.0–48.7
	301–350	University of Bordeaux	France	31.6	27.8	79.5	39.5	59.9	47.0–48.7
	251–300	Brandeis University	United States	28.5	23.1	90.3	37.3	55.5	47.0–48.7
	351–400	Universiti Brunei Darussalam	Brunei Darussalam	26.0	22.6	83.2	40.1	85.2	47.0–48.7
	251–300	University at Buffalo	United States	38.7	33.7	67.7	47.1	63.7	47.0–48.7
	301–350	University of California, Merced	United States	22.9	23.5	96.0	42.2	47.3	47.0–48.7
	251–300	University of Colorado Denver/Anschutz Medical Campus	United States	30.1	20.3	97.0	42.9	31.5	47.0–48.7
	251–300	Dalhousie University	Canada	28.1	30.9	74.3	45.0	89.0	47.0–48.7
	351–400	Drexel University	United States	40.8	26.0	76.4	48.8	50.1	47.0–48.7
	301–350	École Normale Supérieure de Lyon	France	46.9	46.2	47.4	56.6	62.1	47.0–48.7
	301–350	University of Essex	United Kingdom	31.0	32.4	71.0	37.9	96.4	47.0–48.7
	251–300	Flinders University	Australia	27.3	33.1	75.8	43.0	89.8	47.0–48.7
	251–300	Florida State University	United States	40.2	37.3	67.5	40.1	47.8	47.0–48.7
	351–400	University of Galway/Ollscoil na Gaillimhe	Ireland	29.7	32.7	71.2	45.7	82.8	47.0–48.7
	251–300	George Mason University	United States	30.7	26.8	84.0	37.8	50.0	47.0–48.7
	351–400	Hasselt University	Belgium	33.4	39.5	63.3	57.3	70.2	47.0–48.7
	251–300	University of Iowa	United States	42.5	31.6	70.7	51.0	46.2	47.0–48.7
	251–300	Lappeenranta-Lahti University of Technology LUT	Finland	27.8	32.7	77.2	52.1	59.8	47.0–48.7
	301–350	University of Milan	Italy	32.6	30.4	82.5	40.5	43.5	47.0–48.7
	301–350	University of Milan-Bicocca	Italy	24.9	25.9	93.6	40.8	43.0	47.0–48.7
	301–350	Montpellier University	France	35.2	33.6	72.1	39.9	62.2	47.0–48.7
	351–400	Nagoya University	Japan	48.4	54.1	39.7	99.2	35.8	47.0–48.7
	301–350	Nankai University	China	39.7	24.9	79.4	46.2	40.7	47.0–48.7
	201–250	University of Otago	New Zealand	32.4	34.5	70.2	38.8	88.0	47.0–48.7
	251–300	University of Oulu	Finland	28.4	35.8	75.2	46.9	57.5	47.0–48.7
	301–350	Peter the Great St Petersburg Polytechnic University	Russian Federation	31.1	23.7	83.0	75.5	57.4	47.0–48.7
	351–400	Politecnico di Milano	Italy	39.0	45.3	56.4	74.6	62.0	47.0–48.7
	301–350	Reykjavík University	Iceland	15.5	21.5	99.9	38.1	71.4	47.0–48.7
	301–350	RMIT University	Australia	29.4	32.7	71.8	47.6	93.6	47.0–48.7
	301–350	University of St Gallen	Switzerland	28.2	20.4	80.0	47.4	95.9	47.0–48.7
	501–600	Saint Louis University	United States	39.6	15.8	89.4	39.8	34.7	47.0–48.7
	301–350	University of South Australia	Australia	23.0	36.1	70.4	79.5	87.5	47.0–48.7
	401–500	University of Southern Queensland	Australia	24.6	24.3	85.5	41.5	79.8	47.0–48.7
	301–350	Stony Brook University	United States	33.8	26.8	76.1	38.1	69.5	47.0–48.7
	301–350	University of Stuttgart	Germany	44.8	48.6	47.5	88.0	53.5	47.0–48.7
	301–350	Swinburne University of Technology	Australia	25.2	31.1	81.8	45.2	81.5	47.0–48.7
	201–250	Taipei Medical University	Taiwan	44.4	32.2	63.1	93.1	45.8	47.0–48.7
	251–300	Tampere University	Finland	26.6	35.9	76.9	56.1	51.1	47.0–48.7
	301–350	University of Tasmania	Australia	27.1	34.8	71.5	48.1	91.1	47.0–48.7
	301–350	Technical University of Darmstadt	Germany	43.3	48.2	43.8	80.7	59.6	47.0–48.7
	301–350	Temple University	United States	37.4	23.1	83.5	40.2	38.6	47.0–48.7
	301–350	The University of Tennessee-Knoxville	United States	35.6	28.4	79.0	45.1	46.7	47.0–48.7
	301–350	Tokyo Institute of Technology	Japan	49.7	58.2	31.0	80.0	50.0	47.0–48.7
	251–300	University College Cork	Ireland	24.2	28.8	83.7	47.2	84.3	47.0–48.7
	301–350	University of Victoria	Canada	24.7	33.7	75.5	45.7	86.8	47.0–48.7

Rank 2023	Rank 2022	Institution	Country/region	Teaching	Research	Citations	Industry income	International outlook	Overall score
351–400	NR	Imam Mohammad Ibn Saud Islamic University	Saudi Arabia	29.6	17.7	89.6	40.6	65.1	45.0–46.9
	301–350	American University of Beirut	Lebanon	24.7	14.8	89.6	43.0	78.7	45.0–46.9
	501–600	Asia University, Taiwan	Taiwan	18.2	36.5	76.1	97.2	52.5	45.0–46.9
	NR	Ateneo de Manila University	Philippines	32.4	9.5	97.0	37.6	31.8	45.0–46.9
	351–400	Birkbeck, University of London	United Kingdom	30.4	33.3	66.8	37.2	90.7	45.0–46.9
	351–400	University of Bremen	Germany	36.4	38.6	59.0	48.3	59.7	45.0–46.9
	351–400	University of Brescia	Italy	26.4	18.8	95.2	40.2	42.5	45.0–46.9
	301–350	University of Cape Coast	Ghana	17.4	20.7	99.1	63.4	44.7	45.0–46.9
	351–400	Catholic University of Portugal	Portugal	20.2	19.2	97.8	38.8	62.8	45.0–46.9
	301–350	Central South University	China	31.8	41.2	65.7	93.4	26.3	45.0–46.9
	501–600	Charles Darwin University	Australia	22.7	33.2	72.4	45.9	79.8	45.0–46.9
	351–400	City, University of London	United Kingdom	25.6	29.3	69.0	38.3	95.0	45.0–46.9
	301–350	University of Delaware	United States	28.8	39.0	64.9	91.4	51.5	45.0–46.9
	301–350	East China Normal University	China	37.5	32.6	62.0	54.4	54.7	45.0–46.9
	401–500	Edith Cowan University	Australia	20.1	25.3	80.4	40.7	87.4	45.0–46.9
	NR	Golestan University of Medical Sciences	Iran	33.7	8.9	100.0	37.0	33.3	45.0–46.9
	351–400	University of Greifswald	Germany	31.9	26.9	77.6	42.0	56.7	45.0–46.9
	351–400	University of Hail	Saudi Arabia	18.0	9.2	98.7	42.8	82.3	45.0–46.9
	501–600	Harbin Institute of Technology	China	44.2	46.9	49.0	99.6	27.6	45.0–46.9
	251–300	Howard University	United States	45.7	17.6	79.2	36.9	34.3	45.0–46.9
	351–400	IMT Atlantique	France	37.3	35.8	50.1	90.6	77.2	45.0–46.9
	251–300	James Cook University	Australia	23.3	28.2	78.0	43.4	93.8	45.0–46.9
	351–400	JSS Academy of Higher Education and Research	India	34.4	9.4	99.3	38.4	35.2	45.0–46.9
	351–400	University of Kent	United Kingdom	27.9	29.5	67.6	37.4	92.0	45.0–46.9
	351–400	Khalifa University	United Arab Emirates	31.2	37.1	56.2	94.2	92.8	45.0–46.9
	351–400	Kurdistan University of Medical Sciences	Iran	36.1	9.8	98.4	37.6	23.7	45.0–46.9
	NR	Leuphana University of Lüneburg	Germany	25.2	22.1	90.0	38.9	54.3	45.0–46.9
	351–400	University of Liège	Belgium	26.8	38.4	62.2	85.7	72.4	45.0–46.9
	351–400	Loughborough University	United Kingdom	32.2	32.6	61.0	40.3	88.6	45.0–46.9
	301–350	University of Malaya	Malaysia	37.4	32.6	61.2	42.7	82.7	45.0–46.9
	301–350	University of Manitoba	Canada	32.7	31.2	75.0	38.2	56.6	45.0–46.9
	351–400	Mazandaran University of Medical Sciences	Iran	41.8	11.1	93.3	42.1	21.4	45.0–46.9
	401–500	University of Naples Federico II	Italy	34.0	28.3	77.5	42.6	32.3	45.0–46.9
	251–300	University of New Mexico (Main campus)	United States	34.7	29.3	74.5	39.0	37.6	45.0–46.9
	301–350	North Carolina State University	United States	40.9	38.2	59.7	47.5	54.8	45.0–46.9
	301–350	University of Rome II – Tor Vergata	Italy	39.7	28.8	63.8	45.8	65.3	45.0–46.9
	351–400	Royal Holloway, University of London	United Kingdom	28.7	28.4	67.6	39.5	91.6	45.0–46.9
	401–500	Royal Veterinary College	United Kingdom	24.4	20.1	79.6	46.6	93.4	45.0–46.9
	301–350	Rush University	United States	40.9	15.3	90.1	44.1	22.1	45.0–46.9
	NR	Shoolini University of Biotechnology and Management Sciences	India	23.2	14.4	98.3	37.9	49.1	45.0–46.9
	301–350	University of Stirling	United Kingdom	22.9	25.9	79.4	37.3	86.1	45.0–46.9
	301–350	Swedish University of Agricultural Sciences	Sweden	29.9	31.4	71.8	89.2	52.1	45.0–46.9
	351–400	University of Texas at Dallas	United States	24.8	27.0	81.3	42.7	56.4	45.0–46.9
	401–500	Tulane University	United States	41.9	23.0	73.6	38.8	43.8	45.0–46.9
	351–400	University of Turku	Finland	27.7	32.6	73.9	38.7	53.5	45.0–46.9
	401–500	University of Vaasa	Finland	19.6	25.5	88.0	38.5	66.2	45.0–46.9
	401–500	Verona University	Italy	31.4	26.0	80.0	45.5	42.4	45.0–46.9
	301–350	Wake Forest University	United States	39.4	20.2	81.9	45.7	33.0	45.0–46.9
	351–400	Washington State University	United States	33.4	32.7	69.6	50.8	50.1	45.0–46.9
	NR	Wroclaw Medical University	Poland	39.6	11.7	89.0	38.2	37.5	45.0–46.9

A hub for research excellence in Greater China

Among the top 20 universities in Greater China, Macau University of Science and Technology is pioneering research in several fields across its laboratories and research centres

A s the largest multidisciplinary university in Macau and among the top 20 universities in Greater China, the Macau University of Science and Technology (MUST) is committed to its dual role of equipping students with a solid theoretical foundation and practical excellence in their chosen fields.

Since its founding in 2000, MUST has expanded rapidly and now boasts 10 faculties offering a wide range of courses, including social sciences, law, management, business, medicine, pharmacy, tourism, art, communication and languages. Scientific research is another key focus for the institution, with MUST owning two state key laboratories (SKLs), five partner research bases and a joint laboratory with the Ministry of Education of China.

Much of MUST's most pioneering scientific work takes place at its SKLs, one of which is the State Key Lab of Quality Research in Chinese Medicine. Founded in January 2011, this was the first SKL established in Macau and remains the only SKL in the country specialising in the field of traditional Chinese medicine. The laboratory aims to become a research base for advanced international standards, innovative research and intellectual property rights.

The lab brings together and cultivates talent in Chinese medicine while developing high-level international academic exchange and cooperation. The SKL of Quality Research in Chinese Medicine focuses on developing cutting-edge multidisciplinary technologies while establishing open scientific and technological platforms and innovative pharmaceutical research.

The SKL of Quality Research in Chinese Medicine pays special attention to the integration of novel technologies in multidisciplinary fields, focusing on two specific research areas: quality research of traditional Chinese medicine and new drug development. The four areas of research focused on at the lab are the chemical characterisation of traditional Chinese medicine, quality study of high-value Chinese herbal medicine, standardisation and application of anticancer and anti-inflammatory Chinese medicines, and novel Chinese medicines to treat neurodegenerative and metabolic disorders.

The second of the two SKLs owned by MUST is the SKL of Lunar and Planetary Sciences. This lab was established in October 2018 as the first SKL for astronomy and planetary sciences in China. This particular SKL developed from the former Lunar and Planetary Science Laboratory, a joint laboratory of the Chinese Academy of Sciences' (CAS) Key Laboratory of Lunar and Deep Space Exploration, the first offshore co-laboratory of the CAS.

The laboratory began participating in the Chinese Lunar Exploration Project in 2005 through data analysis and scientific research, making MUST the earliest participant from the Hong Kong and Macau region. The overall

goals of this SKL are threefold: to develop the laboratory into a planetary science research centre with international impact; to construct a high-standard international academic exchange and cooperation hub; and to participate in major national deep space exploration projects. The lab also provides scientific support, fosters top-class planetary science talent for the nation and hosts a truly international research team.

In addition, the Data Centre for Science and Application of Macau Satellites was established in March 2022, becoming the first satellite data management organisation established in Macau. The centre is connected to the Macau Science 1 satellite project, with the satellite scheduled to launch at the end of 2022. This will be the first and, so far, only scientific exploration satellite using near-equatorial orbit to monitor the geomagnetic field and space environment of the South Atlantic Anomaly.

Another focal point for scientific research at

MUST is the National Observation and Research Station of Coastal Ecological Environments in Macau. The research station was formally launched by the Ministry of Science and Technology in October 2021, becoming the first and only national observation and research station outside mainland China with an observation platform for coastal ecology.

The facility was built under the patronage and guidance of MUST and, through its establishment, will foster collaboration between Tsinghua University, Peking University, the CAS, and the China Institute of Water Resources and Hydropower Research, among other institutions. The station will focus on scientific observation, joint research and talent training.

The national observation and research station will greatly enhance MUST's research capabilities in the areas of multipollutant synergistic control, regional synergistic management and ecological restoration. Research fields studied at

the station are not only related to coastal environments, however, but touch on other areas, from genomics to sewage treatment engineering design, water eutrophication management, and intelligent forecasting of storm surges and extreme weather disasters.

The station provides strong support for the low-carbon economy, green development and ecological civilization building in the Greater Bay Area. It is indicative of the pioneering research and long-term ambitions that can be found across the laboratories and research centres at MUST.

To find out more about MUST, visit www.must.edu.mo/en

Rank 2023	Rank 2022	Institution	Country/region	Teaching	Research	Citations	Industry income	International outlook	Overall score
401–500	501–600	Alagappa University	India	34.6	11.0	82.8	37.2	35.1	42.1–44.9
	401–500	University of Alaska Fairbanks	United States	29.1	24.9	70.0	47.7	60.0	42.1–44.9
	NR	Arak University of Medical Sciences	Iran	24.6	8.8	100.0	36.9	17.9	42.1–44.9
	401–500	Aston University	United Kingdom	20.5	24.9	76.8	38.8	92.6	42.1–44.9
	401–500	Aswan University	Egypt	16.7	11.6	98.5	37.0	47.8	42.1–44.9
	NR	Babol University of Medical Sciences	Iran	32.3	10.6	97.3	37.3	18.4	42.1–44.9
	351–400	Babol Noshirvani University of Technology	Iran	20.3	20.9	98.4	38.5	22.9	42.1–44.9
	401–500	Bangor University	United Kingdom	28.3	24.7	72.6	37.4	84.3	42.1–44.9
	351–400	University of Bayreuth	Germany	36.4	39.4	55.0	53.3	58.3	42.1–44.9
	351–400	Brunel University London	United Kingdom	24.3	26.4	69.9	37.9	96.9	42.1–44.9
	401–500	University of Campinas	Brazil	47.9	46.7	38.4	44.4	34.1	42.1–44.9
	401–500	Cankaya University	Turkey	15.5	13.2	100.0	37.7	46.7	42.1–44.9
	601–800	University of Catania	Italy	31.2	21.5	79.7	39.4	31.9	42.1–44.9
	401–500	Claude Bernard University Lyon 1	France	36.1	27.2	65.5	41.6	59.0	42.1–44.9
	401–500	Colorado School of Mines	United States	34.0	30.3	63.0	46.2	37.1	42.1–44.9
	351–400	Colorado State University, Fort Collins	United States	31.7	29.6	72.3	43.0	39.1	42.1–44.9
	501–600	Complutense University of Madrid	Spain	31.4	34.7	60.5	39.1	44.7	42.1–44.9
	401–500	University of Connecticut	United States	39.1	29.3	59.8	40.0	54.8	42.1–44.9
	401–500	University of Crete	Greece	20.6	26.0	82.2	51.0	48.4	42.1–44.9
	401–500	University of Cyprus	Cyprus	26.0	23.1	67.0	55.5	83.4	42.1–44.9
	401–500	University of Denver	United States	40.1	24.7	69.8	37.9	27.5	42.1–44.9
	501–600	Dublin City University	Ireland	23.9	33.8	63.2	42.6	82.2	42.1–44.9
	401–500	Duy Tan University	Vietnam	14.4	12.6	100.0	37.7	48.6	42.1–44.9
	501–600	Edinburgh Napier University	United Kingdom	17.9	17.0	81.3	37.0	87.8	42.1–44.9
	501–600	University of Electronic Science and Technology of China	China	29.3	31.2	67.1	67.0	32.4	42.1–44.9
	501–600	Ferhat Abbas Sétif University 1	Algeria	18.2	19.8	94.7	36.9	40.0	42.1–44.9
	401–500	University of Ferrara	Italy	31.4	24.7	70.6	43.0	42.4	42.1–44.9
	401–500	University of Florence	Italy	34.8	32.4	65.6	45.0	44.7	42.1–44.9
	401–500	Free University of Bozen-Bolzano	Italy	23.5	19.4	83.3	38.5	74.2	42.1–44.9
	401–500	University of Genoa	Italy	36.4	28.3	66.5	48.3	43.9	42.1–44.9
	401–500	Georgia State University	United States	34.3	26.9	65.2	38.1	43.4	42.1–44.9
	351–400	Université Grenoble Alpes	France	37.6	35.0	56.1	40.4	65.5	42.1–44.9
	351–400	Hanyang University	South Korea	41.8	40.8	40.8	89.8	63.7	42.1–44.9
	301–350	HSE University	Russian Federation	32.5	45.3	54.6	61.6	43.9	42.1–44.9
	401–500	Hunan University	China	24.0	26.4	87.6	59.1	25.6	42.1–44.9
	401–500	University of Ibadan	Nigeria	30.1	15.7	83.7	37.4	34.5	42.1–44.9
	351–400	Illinois Institute of Technology	United States	43.1	21.8	61.0	39.7	67.3	42.1–44.9
	401–500	University of Innsbruck	Austria	33.9	30.1	55.9	52.5	96.2	42.1–44.9
	401–500	Institut Agro	France	35.4	30.5	59.1	46.7	59.4	42.1–44.9
	501–600	University of International Business and Economics	China	27.2	15.6	84.0	38.1	54.3	42.1–44.9
	401–500	Iowa State University	United States	35.5	36.9	56.5	51.0	39.5	42.1–44.9
	NR	Jazan University	Saudi Arabia	17.5	8.5	97.0	37.1	74.8	42.1–44.9
	401–500	Justus Liebig University Giessen	Germany	33.1	37.3	60.2	43.7	51.8	42.1–44.9
	351–400	University of Jyväskylä	Finland	28.5	33.3	68.0	38.2	51.2	42.1–44.9
	401–500	University of Kansas	United States	38.1	24.4	67.2	46.3	49.2	42.1–44.9
	351–400	University of Klagenfurt	Austria	23.5	18.2	74.7	38.5	90.9	42.1–44.9
	501–600	Koç University	Turkey	30.7	42.3	56.1	100.0	49.3	42.1–44.9
	351–400	University of KwaZulu-Natal	South Africa	30.4	34.4	63.9	38.2	51.5	42.1–44.9
	501–600	University of Lagos	Nigeria	18.5	14.0	97.7	40.9	34.0	42.1–44.9
	401–500	Leibniz University Hannover	Germany	39.1	39.2	46.2	48.9	54.7	42.1–44.9
	501–600	University of Lincoln	United Kingdom	17.8	17.4	85.8	37.5	75.4	42.1–44.9

Rank 2023	Rank 2022	Institution	Country/region	Teaching	Research	Citations	Industry income	International outlook	Overall score
401–500	501–600	Lincoln University	New Zealand	29.7	22.6	59.9	51.7	96.4	42.1–44.9
(cont)	401–500	Liverpool John Moores University	United Kingdom	20.9	19.0	81.2	37.4	77.2	42.1–44.9
	601–800	Mahatma Gandhi University	India	42.5	31.5	58.1	37.9	21.9	42.1–44.9
	401–500	University of Marburg	Germany	36.0	30.1	64.1	36.9	53.9	42.1–44.9
	501–600	Maynooth University	Ireland	21.7	28.9	71.7	39.5	82.5	42.1–44.9
	401–500	Middlesex University	United Kingdom	21.3	19.6	75.3	37.2	91.0	42.1–44.9
	401–500	University of Modena and Reggio Emilia	Italy	32.7	23.2	72.1	49.1	37.6	42.1–44.9
	NR	Muhimbili University of Health and Allied Sciences	Tanzania	17.0	11.0	99.9	39.1	49.2	42.1–44.9
	501–600	Murdoch University	Australia	21.6	27.8	70.6	46.7	93.2	42.1–44.9
	401–500	National and Kapodistrian University of Athens	Greece	22.1	20.1	82.4	67.9	56.3	42.1–44.9
	401–500	National Research Nuclear University MEPhI	Russian Federation	45.3	41.7	29.1	100.0	70.0	42.1–44.9
	401–500	University of Nebraska-Lincoln	United States	34.0	31.0	60.5	39.6	56.1	42.1–44.9
	501–600	University of Nebraska Medical Center	United States	34.9	12.6	83.2	40.2	46.3	42.1–44.9
	401–500	Norwegian University of Science and Technology	Norway	30.0	34.7	60.1	42.9	67.5	42.1–44.9
	301–350	Nova Southeastern University	United States	39.4	10.6	87.5	36.9	28.9	42.1–44.9
	401–500	Örebro University	Sweden	17.7	21.8	87.1	37.7	55.1	42.1–44.9
	351–400	University of Passau	Germany	35.6	38.1	54.5	43.0	53.6	42.1–44.9
	401–500	University of Pisa	Italy	28.8	30.2	69.2	41.7	40.6	42.1–44.9
	401–500	University of Plymouth	United Kingdom	22.2	22.7	79.6	37.2	73.0	42.1–44.9
	401–500	Pontificia Universidad Católica de Chile	Chile	24.2	31.9	66.2	70.3	56.2	42.1–44.9
	401–500	University of Porto	Portugal	26.6	32.3	63.7	41.9	57.9	42.1–44.9
	501–600	University of Portsmouth	United Kingdom	18.8	19.2	76.3	37.6	91.4	42.1–44.9
	NR	Qazvin University of Medical Sciences	Iran	30.6	10.3	99.9	37.0	22.6	42.1–44.9
	NR	Qom University of Medical Sciences	Iran	28.9	9.8	100.0	37.0	19.4	42.1–44.9
	501–600	Quaid-i-Azam University	Pakistan	26.9	22.9	78.7	38.2	48.6	42.1–44.9
	501–600	Sabancı University	Turkey	25.5	37.7	57.0	73.4	59.7	42.1–44.9
	401–500	Sharif University of Technology	Iran	33.5	36.3	60.4	89.5	31.6	42.1–44.9
	351–400	Shenzhen University	China	23.0	27.9	86.0	50.5	34.5	42.1–44.9
	601–800	University of Siena	Italy	21.5	25.3	79.9	41.7	43.5	42.1–44.9
	401–500	South China University of Technology	China	28.2	35.6	70.7	80.7	34.4	42.1–44.9
	501–600	Southeast University	China	34.8	42.3	47.2	93.7	37.8	42.1–44.9
	401–500	Southern Medical University	China	38.6	37.7	58.0	43.8	25.0	42.1–44.9
	401–500	SRUC (Scotland's Rural College)	United Kingdom	23.6	12.6	92.1	42.5	59.1	42.1–44.9
	401–500	University of Strathclyde	United Kingdom	32.0	33.9	56.1	47.8	89.7	42.1–44.9
	501–600	Sumy State University	Ukraine	19.5	12.3	94.5	39.9	57.2	42.1–44.9
	351–400	Syracuse University	United States	34.9	28.0	64.3	37.2	50.7	42.1–44.9
	501–600	Universiti Teknologi Petronas	Malaysia	26.8	33.8	58.9	77.6	76.7	42.1–44.9
	401–500	Tianjin University	China	35.3	42.8	51.6	89.9	41.5	42.1–44.9
	401–500	Ton Duc Thang University	Vietnam	13.5	16.0	99.2	39.8	58.4	42.1–44.9
	351–400	University of Trento	Italy	27.0	32.3	66.5	41.1	56.9	42.1–44.9
	NR	The University of Tulsa	United States	37.8	17.1	75.6	48.0	36.4	42.1–44.9
	401–500	University of Turin	Italy	21.5	29.7	77.5	43.9	41.4	42.1–44.9
	401–500	TU Wien	Austria	40.1	37.4	38.1	62.0	87.6	42.1–44.9
	351–400	Umeå University	Sweden	21.9	29.6	78.4	38.5	64.5	42.1–44.9
	501–600	Urmia University of Medical Sciences	Iran	35.0	10.0	90.4	36.9	19.7	42.1–44.9
	601–800	Universiti Utara Malaysia	Malaysia	33.4	25.7	60.2	41.2	74.8	42.1–44.9
	501–600	Victoria University of Wellington	New Zealand	27.8	34.0	53.2	53.7	87.4	42.1–44.9
	401–500	University of Waikato	New Zealand	21.6	28.1	66.4	40.8	95.4	42.1–44.9
	401–500	University of the West of England	United Kingdom	18.3	14.6	92.9	37.6	72.9	42.1–44.9
	301–350	William & Mary	United States	43.7	21.4	64.3	37.3	35.7	42.1–44.9
	401–500	Xiamen University	China	30.8	28.5	78.4	53.1	28.3	42.1–44.9
	401–500	York University	Canada	25.1	33.1	67.0	42.1	75.3	42.1–44.9

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Rank 2023	Rank 2022	Institution	Country/region	Teaching	Research	Citations	Industry income	International outlook	Overall score
501–600	501–600	Aberystwyth University	United Kingdom	22.3	23.4	64.1	39.8	81.1	39.3–42.0
	401–500	An-Najah National University	Palestine	13.3	8.9	98.4	38.1	64.1	39.3–42.0
	501–600	University of L'Aquila	Italy	33.0	24.3	69.2	54.8	34.6	39.3–42.0
	801–1,000	Bauman Moscow State Technical University	Russian Federation	56.6	32.0	23.8	81.0	49.5	39.3–42.0
	501–600	Beihang University	China	32.9	39.6	48.4	90.0	27.1	39.3–42.0
	601–800	Beijing Institute of Technology	China	33.6	36.2	49.9	99.8	25.8	39.3–42.0
	501–600	Birmingham City University	United Kingdom	16.3	10.8	90.3	37.1	72.0	39.3–42.0
	601–800	University of Bradford	United Kingdom	22.0	22.7	62.5	39.7	84.2	39.3–42.0
	501–600	Bucharest University of Economic Studies	Romania	17.9	11.1	97.7	37.8	24.6	39.3–42.0
	501–600	Centrale Nantes	France	31.9	28.7	45.3	81.0	86.3	39.3–42.0
	NR	Changsha University of Science and Technology	China	15.5	11.8	93.8	54.8	23.5	39.3–42.0
	501–600	Charles University in Prague	Czech Republic	33.2	31.0	49.7	37.3	64.3	39.3–42.0
	401–500	University of Côte d'Azur	France	24.9	21.1	69.9	37.6	74.0	39.3–42.0
	NR	Damietta University	Egypt	17.0	8.2	99.9	37.5	39.0	39.3–42.0
	401–500	Durban University of Technology	South Africa	17.6	11.6	90.0	38.5	38.8	39.3–42.0
	501–600	Eastern Mediterranean University	Northern Cyprus	22.4	14.2	76.6	46.1	89.3	39.3–42.0
	401–500	École des Mines de Saint-Étienne	France	32.3	30.8	51.6	76.1	70.9	39.3–42.0
	501–600	Federal University of Toulouse Midi-Pyrénées	France	26.4	27.5	61.2	39.9	66.0	39.3–42.0
	501–600	Florida International University	United States	32.2	27.4	62.7	37.9	41.7	39.3–42.0
	401–500	University of Fribourg	Switzerland	29.3	31.3	54.8	49.4	82.5	39.3–42.0
	401–500	Goldsmiths, University of London	United Kingdom	25.5	25.9	63.4	37.0	80.7	39.3–42.0
	601–800	Government College University Faisalabad	Pakistan	16.8	13.1	88.1	37.0	45.3	39.3–42.0
	601–800	University of Greenwich	United Kingdom	18.1	16.8	78.2	37.8	94.6	39.3–42.0
	501–600	University of Guelph	Canada	29.5	33.4	48.7	49.3	60.6	39.3–42.0
	501–600	Gwangju Institute of Science and Technology (GIST)	South Korea	44.5	40.8	31.4	76.8	39.8	39.3–42.0
	351–400	Harokopio University	Greece	23.2	24.2	76.2	43.9	43.9	39.3–42.0
	501–600	Heriot-Watt University	United Kingdom	31.2	31.1	48.3	43.0	94.0	39.3–42.0
	501–600	Hokkaido University	Japan	43.1	40.8	32.2	65.4	44.0	39.3–42.0
	401–500	Hong Kong Baptist University	Hong Kong	26.5	28.2	57.4	40.1	98.0	39.3–42.0
	601–800	University of Hull	United Kingdom	25.3	24.6	62.1	38.2	77.6	39.3–42.0
	401–500	University of Iceland	Iceland	18.7	32.0	66.3	63.1	61.6	39.3–42.0
	351–400	Indian Institute of Technology Ropar	India	30.1	15.4	78.4	42.7	19.4	39.3–42.0
	401–500	University of Insubria	Italy	18.0	22.6	84.8	38.6	40.3	39.3–42.0
	601–800	International Institute of Information Technology, Hyderabad	India	18.4	23.1	79.5	68.8	30.2	39.3–42.0
	601–800	Iran University of Science and Technology	Iran	32.6	36.8	54.2	98.4	21.2	39.3–42.0
	501–600	Islamic Azad University, Najafabad Branch (IAUN)	Iran	21.9	8.5	96.4	37.3	23.5	39.3–42.0
	401–500	Jacobs University	Germany	34.5	31.4	40.5	56.2	90.2	39.3–42.0
	601–800	Jamia Millia Islamia	India	36.6	12.5	75.8	38.2	27.7	39.3–42.0
	NR	Jimma University	Ethiopia	14.7	9.5	100.0	37.5	39.5	39.3–42.0
	601–800	Johannes Kepler University of Linz	Austria	32.5	32.9	42.3	73.1	70.4	39.3–42.0
	401–500	Jordan University of Science and Technology	Jordan	15.7	10.3	92.2	38.2	50.6	39.3–42.0
	501–600	Kafrelsheikh University	Egypt	13.6	8.4	96.7	39.2	48.3	39.3–42.0
	601–800	Kashan University of Medical Sciences and Health Services	Iran	32.0	13.4	84.0	37.4	22.9	39.3–42.0
	501–600	Keele University	United Kingdom	21.1	24.8	68.4	37.5	73.1	39.3–42.0
	501–600	University of Kentucky	United States	36.1	27.3	59.2	40.4	39.0	39.3–42.0
	NR	Kermanshah University of Medical Sciences	Iran	20.8	10.3	95.0	37.3	39.3	39.3–42.0
	401–500	University of Kragujevac	Serbia	21.5	8.3	96.0	39.3	33.3	39.3–42.0
	501–600	Kyushu University	Japan	46.0	42.5	34.8	71.0	43.6	39.3–42.0
	801–1,000	Lebanese American University	Lebanon	29.4	11.9	69.5	37.0	86.5	39.3–42.0

Rank 2023	Rank 2022	Institution	Country/region	Teaching	Research	Citations	Industry income	International outlook	Overall score
501–600	501–600	University of Lille	France	30.7	21.5	59.5	42.2	62.5	39.3–42.0
(cont)	501–600	University of Lisbon	Portugal	26.4	35.7	53.4	43.0	60.4	39.3–42.0
	NR	University of Management and Technology	Pakistan	14.8	9.5	99.9	39.5	45.4	39.3–42.0
	501–600	University of Messina	Italy	31.7	23.6	72.1	38.6	32.1	39.3–42.0
	601–800	Middle East Technical University	Turkey	37.5	42.4	35.4	99.9	44.6	39.3–42.0
	401–500	Missouri University of Science and Technology	United States	29.0	26.7	61.3	58.7	62.9	39.3–42.0
	NR	University of Mons	Belgium	23.1	27.0	60.1	41.3	69.9	39.3–42.0
	351–400	National Tsing Hua University	Taiwan	32.6	42.6	47.2	69.2	43.0	39.3–42.0
	301–350	National Yang Ming Chiao Tung University	Taiwan	41.3	46.7	34.9	79.9	41.3	39.3–42.0
	601–800	University of Neuchâtel	Switzerland	26.2	25.2	58.3	39.5	88.7	39.3–42.0
	601–800	University of Nicosia	Cyprus	19.6	16.6	75.7	37.4	94.8	39.3–42.0
	401–500	Northumbria University	United Kingdom	20.5	22.4	71.5	37.5	81.6	39.3–42.0
	501–600	Northwestern Polytechnical University	China	30.2	37.7	54.8	69.5	40.1	39.3–42.0
	501–600	Nottingham Trent University	United Kingdom	19.4	15.0	79.6	37.5	82.2	39.3–42.0
	601–800	Open University of Catalonia	Spain	20.0	18.9	81.2	37.7	48.1	39.3–42.0
	401–500	University of Peradeniya	Sri Lanka	17.3	8.9	99.2	39.1	40.3	39.3–42.0
	401–500	Universitat Ramon Llull	Spain	19.5	17.0	83.6	40.0	66.5	39.3–42.0
	401–500	Saint-Petersburg Mining University	Russian Federation	22.6	14.5	83.3	82.3	35.3	39.3–42.0
	401–500	University of Salerno	Italy	18.9	23.3	77.4	39.1	35.0	39.3–42.0
	501–600	University of Saskatchewan	Canada	36.7	30.3	48.6	69.7	75.0	39.3–42.0
	501–600	University of Sassari	Italy	32.1	27.6	62.4	38.4	37.9	39.3–42.0
	601–800	Saveetha University	India	22.4	8.5	97.1	38.1	35.3	39.3–42.0
	401–500	Sciences Po	France	28.8	25.1	57.9	39.1	82.1	39.3–42.0
	601–800	Shiraz University of Technology	Iran	28.4	22.8	78.0	42.1	29.4	39.3–42.0
	401–500	SOAS University of London	United Kingdom	33.9	38.5	42.4	37.0	81.4	39.3–42.0
	401–500	University of South Carolina-Columbia	United States	35.0	24.0	65.5	37.6	45.9	39.3–42.0
	501–600	Southwestern University of Finance and Economics	China	20.0	12.8	93.6	39.8	39.7	39.3–42.0
	401–500	University of Stavanger	Norway	20.7	15.6	72.3	41.3	77.0	39.3–42.0
	601–800	Stevens Institute of Technology	United States	22.8	20.5	69.6	37.6	73.5	39.3–42.0
	351–400	SUNY University at Albany	United States	24.6	25.7	71.4	44.6	50.4	39.3–42.0
	401–500	University of Tabuk	Saudi Arabia	16.1	8.6	87.9	41.7	72.9	39.3–42.0
	401–500	Technion Israel Institute of Technology	Israel	33.7	30.9	51.2	38.6	72.0	39.3–42.0
	501–600	Tokyo Medical and Dental University (TMDU)	Japan	45.1	29.7	44.0	74.5	31.7	39.3–42.0
	501–600	University of Trieste	Italy	28.5	25.5	63.8	39.0	47.5	39.3–42.0
	501–600	University of Tsukuba	Japan	43.9	37.8	38.5	43.7	43.0	39.3–42.0
	401–500	TU Dortmund University	Germany	35.9	43.2	43.7	46.1	44.2	39.3–42.0
	501–600	University of Tuscia	Italy	19.1	20.2	81.6	47.7	39.5	39.3–42.0
	601–800	University of Udine	Italy	26.1	19.6	73.6	39.9	38.2	39.3–42.0
	351–400	UiT The Arctic University of Norway	Norway	22.8	20.8	75.3	39.0	68.6	39.3–42.0
	401–500	University of Valencia	Spain	23.0	23.8	71.3	39.0	49.9	39.3–42.0
	401–500	University of Vic – Central University of Catalonia	Spain	16.1	12.0	91.6	37.9	59.7	39.3–42.0
	401–500	Victoria University	Australia	25.5	26.9	63.6	44.5	79.1	39.3–42.0
	NR	Virginia Commonwealth University	United States	28.9	12.3	86.2	42.5	30.7	39.3–42.0
	401–500	Wayne State University	United States	34.0	18.6	67.2	48.8	35.3	39.3–42.0
	401–500	The University of the West Indies	Jamaica	17.6	10.8	90.3	38.9	58.1	39.3–42.0
	401–500	Xi'an Jiaotong University	China	36.4	42.7	47.1	75.0	29.4	39.3–42.0
	NR	University of Zambia	Zambia	15.7	9.2	96.8	38.4	49.9	39.3–42.0
	601–800	Zayed University	United Arab Emirates	17.7	16.0	79.1	37.6	74.5	39.3–42.0
	501–600	Zhejiang Normal University	China	16.7	15.5	87.5	65.4	30.5	39.3–42.0

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Rank 2023	Rank 2022	Institution	Country/region	Teaching	Research	Citations	Industry income	International outlook	Overall score
601–800	601–800	Abdul Wali Khan University Mardan	Pakistan	15.0	12.0	88.0	36.9	46.4	34.0–39.2
	601–800	Åbo Akademi University	Finland	22.0	31.2	44.4	40.0	65.0	34.0–39.2
	401–500	Addis Ababa University	Ethiopia	19.6	12.4	79.5	41.9	46.6	34.0–39.2
	601–800	Ahvaz Jundishapur University of Medical Sciences (AJUMS)	Iran	33.5	10.0	65.5	37.5	18.2	34.0–39.2
	601–800	Ajou University	South Korea	31.1	37.5	41.7	74.3	44.4	34.0–39.2
	801–1,000	Amedeo Avogadro University of Eastern Piedmont	Italy	13.9	22.2	64.5	37.5	41.6	34.0–39.2
	501–600	American University	United States	40.7	16.8	55.7	42.5	37.3	34.0–39.2
	801–1,000	American University of Sharjah	United Arab Emirates	20.9	21.3	45.6	38.9	93.5	34.0–39.2
	501–600	Amirkabir University of Technology	Iran	30.1	31.9	54.9	64.9	31.7	34.0–39.2
	NR	University of Antofagasta	Chile	14.8	9.5	81.0	36.9	52.4	34.0–39.2
	601–800	University of Arkansas	United States	29.1	27.6	48.5	39.5	30.6	34.0–39.2
	601–800	Auburn University	United States	32.4	23.4	45.9	43.8	49.3	34.0–39.2
	601–800	Azarbaijan Shahid Madani University	Iran	18.1	13.0	83.8	38.4	22.7	34.0–39.2
	NR	University of Babylon	Iraq	18.0	7.8	85.0	37.0	21.6	34.0–39.2
	801–1,000	Bahçeşehir University	Turkey	19.3	20.9	62.3	51.9	49.5	34.0–39.2
	NR	Bahria University	Pakistan	13.6	9.1	79.7	37.4	43.7	34.0–39.2
	601–800	Banaras Hindu University	India	38.8	16.9	66.0	37.0	20.1	34.0–39.2
	501–600	University of Bari Aldo Moro	Italy	16.6	22.8	72.5	38.9	33.6	34.0–39.2
	601–800	Bar-Ilan University	Israel	30.5	34.0	42.0	49.4	50.3	34.0–39.2
	801–1,000	Baylor University	United States	33.7	18.3	52.4	37.4	29.3	34.0–39.2
	NR	Beirut Arab University	Lebanon	33.6	16.4	56.1	37.0	83.9	34.0–39.2
	801–1,000	Ben-Gurion University of the Negev	Israel	30.3	31.1	43.4	42.8	37.0	34.0–39.2
	801–1,000	Benha University	Egypt	16.5	8.6	77.0	37.8	45.1	34.0–39.2
	601–800	Université Bourgogne Franche-Comté (UBFC)	France	19.6	18.3	69.7	40.7	55.4	34.0–39.2
	601–800	Ca' Foscari University of Venice	Italy	34.4	32.3	34.3	44.6	60.8	34.0–39.2
	501–600	University of Camerino (Unicam)	Italy	20.9	15.8	61.4	44.7	49.3	34.0–39.2
	501–600	University of Canterbury	New Zealand	25.2	27.5	45.3	39.7	92.0	34.0–39.2
	501–600	Capital Medical University	China	30.4	18.3	65.8	37.3	22.8	34.0–39.2
	601–800	Carleton University	Canada	21.5	30.5	50.4	43.0	72.2	34.0–39.2
	601–800	University of Central Florida	United States	26.1	29.5	60.1	46.0	34.4	34.0–39.2
	801–1,000	Central Queensland University	Australia	19.4	19.6	66.5	40.3	61.7	34.0–39.2
	601–800	Chongqing University	China	27.8	33.2	52.8	85.2	24.8	34.0–39.2
	601–800	Chung-Ang University	South Korea	37.3	38.3	29.2	78.6	56.1	34.0–39.2
	501–600	Clark University	United States	24.9	20.7	64.9	36.9	58.4	34.0–39.2
	601–800	University of Coimbra	Portugal	25.1	35.2	40.4	49.8	59.5	34.0–39.2
	801–1,000	University of Colombo	Sri Lanka	28.9	9.6	74.5	37.0	37.0	34.0–39.2
	801–1,000	COMSATS University Islamabad	Pakistan	17.1	14.7	78.2	37.0	46.8	34.0–39.2
	601–800	Concordia University	Canada	22.6	27.4	46.4	39.2	85.6	34.0–39.2
	801–1,000	University of Córdoba	Spain	22.7	21.2	56.0	39.4	47.5	34.0–39.2
	501–600	University of Costa Rica	Costa Rica	18.2	9.0	71.2	36.9	48.1	34.0–39.2
	601–800	Covenant University	Nigeria	22.1	24.8	59.4	44.3	46.0	34.0–39.2
	501–600	Cyprus University of Technology	Cyprus	23.7	16.7	53.9	38.9	78.6	34.0–39.2
	601–800	Dalian University of Technology	China	28.6	29.6	46.1	73.0	31.9	34.0–39.2
	601–800	Delhi Technological University	India	17.8	17.0	80.1	42.5	17.3	34.0–39.2
	601–800	De Montfort University	United Kingdom	17.0	14.8	59.3	37.0	89.6	34.0–39.2
	601–800	University of Derby	United Kingdom	16.5	12.0	66.5	37.4	70.2	34.0–39.2
	501–600	University of Desarrollo	Chile	15.0	10.1	73.8	39.6	50.6	34.0–39.2
	801–1,000	University of Dhaka	Bangladesh	15.2	8.6	85.9	37.3	43.1	34.0–39.2
	NR	Dow University of Health Sciences	Pakistan	20.8	8.2	74.0	37.2	35.8	34.0–39.2
	501–600	University of Eastern Finland	Finland	24.8	29.1	58.3	40.0	50.5	34.0–39.2

Rank 2023	Rank 2022	Institution	Country/region	Teaching	Research	Citations	Industry income	International outlook	Overall score
601–800	NR	Universidade Eduardo Mondlane	Mozambique	12.1	8.4	89.4	36.9	48.7	34.0–39.2
(cont)	NR	University of Engineering and Technology, Taxila	Pakistan	15.1	12.5	88.9	37.2	42.7	34.0–39.2
	NR	ENSTA Bretagne	France	26.3	23.3	48.7	64.7	49.5	34.0–39.2
	601–800	Eötvös Loránd University	Hungary	32.9	18.2	49.6	37.2	52.1	34.0–39.2
	1,001–1,200	Fayoum University	Egypt	15.3	10.4	79.7	40.2	42.4	34.0–39.2
	601–800	Universidade Federal do Rio Grande do Sul	Brazil	32.1	21.9	50.8	39.8	28.7	34.0–39.2
	801–1,000	Universidade Federal de São Paulo (UNIFESP)	Brazil	29.6	21.4	55.4	37.3	30.5	34.0–39.2
	601–800	Federation University Australia	Australia	18.6	15.8	70.5	41.1	81.2	34.0–39.2
	NR	Financial University under the Government of the Russian Federation	Russian Federation	18.8	14.6	71.1	39.7	23.7	34.0–39.2
	601–800	Gabriele d'Annunzio University	Italy	15.1	18.9	72.9	37.8	38.4	34.0–39.2
	351–400	University of Georgia	United States	39.5	25.8	52.8	39.2	37.6	34.0–39.2
	601–800	Glasgow Caledonian University	United Kingdom	18.4	13.8	65.4	37.4	69.0	34.0–39.2
	601–800	University of Granada	Spain	23.2	28.8	50.5	37.2	50.2	34.0–39.2
	NR	Graphic Era University	India	25.0	9.0	83.1	41.6	25.5	34.0–39.2
	601–800	University of Graz	Austria	25.2	19.3	59.3	38.2	81.7	34.0–39.2
	601–800	Graz University of Technology	Austria	32.0	20.3	42.5	63.1	83.6	34.0–39.2
	601–800	Guangzhou University	China	16.1	14.3	76.9	41.5	28.9	34.0–39.2
	NR	Guangzhou Medical University	China	22.2	8.3	87.6	38.2	24.2	34.0–39.2
	601–800	Hacettepe University	Turkey	29.0	26.1	51.9	89.1	25.7	34.0–39.2
	601–800	University of Haifa	Israel	21.5	29.1	66.4	38.1	36.1	34.0–39.2
	601–800	Hamburg University of Technology	Germany	36.1	23.9	42.5	88.1	56.9	34.0–39.2
	601–800	Hazara University Mansehra	Pakistan	17.4	10.1	82.0	37.0	44.3	34.0–39.2
	601–800	University of Hertfordshire	United Kingdom	17.7	13.2	58.1	37.3	86.1	34.0–39.2
	601–800	University of Houston	United States	34.9	28.0	48.8	42.5	43.2	34.0–39.2
	601–800	University of Huddersfield	United Kingdom	23.2	23.7	49.8	39.7	82.8	34.0–39.2
	NR	Icesi University	Colombia	19.1	9.1	86.0	37.4	37.3	34.0–39.2
	NR	Ilam University of Medical Sciences	Iran	26.1	10.7	85.1	38.5	20.8	34.0–39.2
	801–1,000	Imam Abdulrahman Bin Faisal University	Saudi Arabia	22.1	9.9	64.0	37.5	72.9	34.0–39.2
	401–500	Indian Institute of Technology Indore	India	32.8	23.7	61.8	39.1	24.9	34.0–39.2
	601–800	Indraprastha Institute of Information Technology Delhi	India	21.5	17.5	69.6	78.9	33.8	34.0–39.2
	601–800	International Islamic University, Islamabad	Pakistan	17.2	10.8	80.7	36.9	52.2	34.0–39.2
	501–600	Iran University of Medical Sciences	Iran	46.0	14.9	56.1	41.7	27.1	34.0–39.2
	601–800	Istanbul Technical University	Turkey	31.9	35.5	29.1	100.0	42.6	34.0–39.2
	501–600	Jagiellonian University	Poland	31.3	25.3	56.7	37.6	40.9	34.0–39.2
	1,001–1,200	Jamia Hamdard University	India	18.9	12.6	73.3	40.5	31.3	34.0–39.2
	601–800	Jawaharlal Nehru University	India	44.1	23.5	38.3	37.9	19.5	34.0–39.2
	801–1,000	Jiangsu University	China	21.0	12.5	66.5	58.8	44.4	34.0–39.2
	601–800	Jinan University	China	21.6	20.2	57.1	45.0	52.9	34.0–39.2
	601–800	University of Johannesburg	South Africa	24.7	33.4	35.8	45.5	74.9	34.0–39.2
	NR	Jönköping University	Sweden	18.6	18.3	58.9	38.1	65.5	34.0–39.2
	801–1,000	The University of Jordan	Jordan	24.8	12.4	60.9	40.8	59.9	34.0–39.2
	NR	Jouf University	Saudi Arabia	27.3	17.7	47.7	38.4	75.0	34.0–39.2
	601–800	University of Kaiserslautern	Germany	37.5	26.7	32.2	62.5	54.9	34.0–39.2
	801–1,000	Kalasalingam Academy of Research and Education	India	22.3	9.3	82.3	39.3	23.3	34.0–39.2
	601–800	Kansai Medical University	Japan	27.6	8.5	82.6	38.1	18.2	34.0–39.2
	601–800	University of Kashan	Iran	21.4	19.2	76.3	38.4	22.8	34.0–39.2
	601–800	Universiti Kebangsaan Malaysia	Malaysia	37.6	23.9	47.1	40.1	65.7	34.0–39.2
	801–1,000	KIIT University	India	30.3	13.6	67.5	69.5	28.0	34.0–39.2
	801–1,000	King Saud bin Abdulaziz University for Health Sciences	Saudi Arabia	34.8	13.9	50.1	42.9	62.9	34.0–39.2
	601–800	Konkuk University	South Korea	30.6	37.8	30.5	45.8	42.1	34.0–39.2

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Rank 2023	Rank 2022	Institution	Country/region	Teaching	Research	Citations	Industry income	International outlook	Overall score
601–800	NR	Kore University of Enna	Italy	16.7	12.1	86.3	37.9	37.7	34.0–39.2
(cont)	601–800	University of Kurdistan	Iran	14.7	14.4	74.2	41.8	30.9	34.0–39.2
	801–1,000	Lahore University of Management Sciences	Pakistan	21.5	15.7	64.5	38.8	47.2	34.0–39.2
	601–800	Lehigh University	United States	28.3	21.4	52.3	39.3	65.2	34.0–39.2
	601–800	University of Limerick	Ireland	24.2	30.3	50.8	40.7	83.0	34.0–39.2
	801–1,000	London South Bank University	United Kingdom	18.0	12.1	63.5	37.5	87.7	34.0–39.2
	601–800	University of Lorraine	France	23.2	17.8	54.6	39.7	64.7	34.0–39.2
	601–800	Louisiana State University	United States	34.8	21.4	47.0	38.2	39.9	34.0–39.2
	601–800	Lviv Polytechnic National University	Ukraine	19.4	10.7	53.7	38.0	25.3	34.0–39.2
	NR	Maharishi Markandeshwar University (MMU)	India	19.9	8.2	76.8	37.3	26.6	34.0–39.2
	NR	Majmaah University	Saudi Arabia	16.0	8.5	71.4	37.0	72.6	34.0–39.2
	601–800	University of Malakand	Pakistan	17.0	11.4	79.3	37.5	44.8	34.0–39.2
	601–800	Manchester Metropolitan University	United Kingdom	19.1	17.4	69.1	37.4	73.8	34.0–39.2
	501–600	Mansoura University	Egypt	20.7	11.5	80.6	43.7	48.9	34.0–39.2
	601–800	Marche Polytechnic University	Italy	20.4	22.3	73.1	45.4	33.9	34.0–39.2
	601–800	University of Maryland, Baltimore County	United States	23.0	22.2	58.4	37.9	37.7	34.0–39.2
	601–800	Mashhad University of Medical Sciences	Iran	29.3	13.5	60.9	37.0	26.2	34.0–39.2
	601–800	Massey University	New Zealand	24.3	25.8	39.7	43.8	92.9	34.0–39.2
	NR	Medical University of Lodz	Poland	20.7	9.7	80.1	37.1	30.4	34.0–39.2
	601–800	Memorial University of Newfoundland	Canada	23.3	22.7	47.6	72.1	81.2	34.0–39.2
	1,001–1,200	Minia University	Egypt	15.9	8.5	74.9	37.1	46.2	34.0–39.2
	501–600	Mizzou – University of Missouri	United States	34.8	25.3	52.1	40.2	44.7	34.0–39.2
	501–600	University of Mohaghegh Ardabili	Iran	20.9	11.1	75.1	37.2	27.5	34.0–39.2
	501–600	University of Nairobi	Kenya	13.2	8.8	86.9	36.9	47.3	34.0–39.2
	NR	University of Namibia	Namibia	13.3	8.0	90.3	36.9	64.2	34.0–39.2
	NR	Nanjing Agricultural University	China	20.5	24.1	59.5	47.5	24.9	34.0–39.2
	601–800	Nantes Université	France	27.3	24.4	62.0	42.0	51.9	34.0–39.2
	601–800	National Cheng Kung University (NCKU)	Taiwan	31.9	39.9	25.2	100.0	38.7	34.0–39.2
	601–800	National University of Science and Technology (MISiS)	Russian Federation	30.7	22.2	38.3	85.9	64.6	34.0–39.2
	601–800	National Taiwan University of Science and Technology (Taiwan Tech)	Taiwan	26.8	35.9	41.6	65.9	53.7	34.0–39.2
	801–1,000	National Institute of Technology Silchar	India	28.4	16.0	61.3	38.0	17.7	34.0–39.2
	1,001–1,200	National Yunlin University of Science and Technology	Taiwan	19.6	27.1	57.1	93.3	34.3	34.0–39.2
	801–1,000	Near East University	Northern Cyprus	20.7	17.4	57.6	78.5	95.7	34.0–39.2
	801–1,000	University of Nevada, Las Vegas	United States	31.8	24.6	50.7	37.3	31.0	34.0–39.2
	601–800	University of New Brunswick UNB	Canada	20.5	21.3	52.4	38.4	74.8	34.0–39.2
	501–600	New Jersey Institute of Technology	United States	20.5	20.6	60.6	40.1	85.2	34.0–39.2
	801–1,000	University of North Carolina at Charlotte	United States	20.2	19.3	71.7	39.4	31.6	34.0–39.2
	NR	North South University	Bangladesh	12.7	9.3	87.8	36.9	34.8	34.0–39.2
	501–600	North-West University	South Africa	20.4	18.5	67.3	40.4	50.8	34.0–39.2
	601–800	Norwegian University of Life Sciences	Norway	25.0	13.3	61.8	41.0	72.3	34.0–39.2
	401–500	NOVA University of Lisbon	Portugal	23.7	31.1	42.4	54.5	64.2	34.0–39.2
	401–500	University of Occupational and Environmental Health, Japan	Japan	27.1	10.8	78.6	42.1	20.3	34.0–39.2
	501–600	Oklahoma State University	United States	29.7	20.5	53.8	39.6	45.7	34.0–39.2
	601–800	Ontario Tech University	Canada	19.5	24.3	53.0	40.6	60.9	34.0–39.2
	601–800	The Open University	United Kingdom	19.2	16.9	60.5	37.1	57.3	34.0–39.2
	601–800	Oxford Brookes University	United Kingdom	24.6	22.7	52.8	37.2	83.6	34.0–39.2
	601–800	University of Parma	Italy	18.3	22.1	65.1	41.9	37.1	34.0–39.2
	601–800	Universidad Peruana Cayetano Heredia	Peru	20.7	12.0	80.9	41.9	47.2	34.0–39.2
	501–600	University of Perugia	Italy	21.6	19.3	73.5	41.9	46.0	34.0–39.2
	501–600	Plekhanov Russian University of Economics	Russian Federation	21.9	12.2	66.7	40.1	42.1	34.0–39.2

Rank 2023	Rank 2022	Institution	Country/region	Teaching	Research	Citations	Industry income	International outlook	Overall score
601–800	501–600	Polytechnic University of Bari	Italy	18.5	23.1	73.3	57.9	35.0	34.0–39.2
(cont)	601–800	Polytechnic University of Turin	Italy	23.9	26.7	58.4	55.7	48.7	34.0–39.2
	601–800	Prince Sattam Bin Abdulaziz University	Saudi Arabia	17.7	9.9	80.4	37.8	73.6	34.0–39.2
	601–800	Universiti Putra Malaysia	Malaysia	38.5	28.2	28.8	74.3	79.4	34.0–39.2
	801–1,000	Qingdao University	China	16.4	14.7	75.9	40.9	22.1	34.0–39.2
	601–800	Université du Québec	Canada	26.9	29.1	35.6	43.8	72.0	34.0–39.2
	601–800	University of Regina	Canada	17.6	18.0	64.4	39.0	68.3	34.0–39.2
	501–600	Rensselaer Polytechnic Institute	United States	28.9	26.1	51.0	59.1	72.6	34.0–39.2
	501–600	Riga Stradiņš University	Latvia	16.2	11.2	75.5	38.2	73.1	34.0–39.2
	NR	Riphah International University	Pakistan	13.6	9.0	82.8	37.0	44.5	34.0–39.2
	601–800	Rovira i Virgili University	Spain	21.9	22.3	61.5	40.5	55.2	34.0–39.2
	601–800	RUDN University	Russian Federation	38.0	21.5	37.9	43.4	63.5	34.0–39.2
	601–800	Universiti Sains Malaysia	Malaysia	36.1	25.3	43.2	44.8	60.6	34.0–39.2
	601–800	San Diego State University	United States	24.5	11.1	69.4	37.6	33.5	34.0–39.2
	501–600	University of Sannio	Italy	18.0	18.5	70.8	55.5	28.6	34.0–39.2
	801–1,000	University of Santiago de Compostela	Spain	24.2	19.8	55.7	40.7	45.6	34.0–39.2
	801–1,000	Savitribai Phule Pune University	India	40.6	23.5	46.0	38.7	22.0	34.0–39.2
	NR	University of Campania Luigi Vanvitelli	Italy	23.3	8.6	78.0	37.8	28.9	34.0–39.2
	601–800	Shanghai University	China	24.7	33.1	41.4	75.3	35.3	34.0–39.2
	601–800	Soochow University, China	China	23.0	21.4	64.5	59.9	25.9	34.0–39.2
	601–800	Southern Cross University	Australia	18.7	24.9	55.9	47.4	80.7	34.0–39.2
	501–600	University of Strasbourg	France	24.7	23.1	59.6	44.2	73.3	34.0–39.2
	801–1,000	Sultan Qaboos University	Oman	23.1	18.4	56.9	40.6	74.9	34.0–39.2
	601–800	University of the Sunshine Coast	Australia	19.5	26.5	48.0	42.9	70.5	34.0–39.2
	601–800	SUNY Binghamton University	United States	25.3	20.4	56.8	40.0	37.0	34.0–39.2
	601–800	University of Tabriz	Iran	23.4	21.4	68.9	41.0	36.7	34.0–39.2
	601–800	Tabriz University of Medical Sciences	Iran	42.4	13.9	58.4	37.1	25.7	34.0–39.2
	1,201+	Taif University	Saudi Arabia	16.9	12.4	75.3	38.8	72.0	34.0–39.2
	601–800	Tallinn University of Technology	Estonia	20.2	20.8	55.1	52.4	77.6	34.0–39.2
	801–1,000	University of Tehran	Iran	32.9	31.7	51.9	36.9	29.0	34.0–39.2
	601–800	Tehran University of Medical Sciences	Iran	46.4	17.4	44.8	40.6	31.7	34.0–39.2
	601–800	Universiti Teknologi Malaysia	Malaysia	33.0	28.9	41.7	46.2	64.2	34.0–39.2
	601–800	University of Texas at Arlington	United States	23.9	19.2	56.8	40.2	45.6	34.0–39.2
	601–800	The University of Texas at San Antonio	United States	21.2	21.5	69.0	39.0	38.0	34.0–39.2
	501–600	Thapar Institute of Engineering and Technology	India	21.3	12.0	88.4	37.3	23.4	34.0–39.2
	601–800	University of Toledo	United States	34.8	15.1	49.9	41.9	48.6	34.0–39.2
	601–800	Tomsk State University	Russian Federation	41.5	37.4	18.0	88.7	73.5	34.0–39.2
	601–800	TU Braunschweig	Germany	26.4	15.4	53.8	42.8	58.4	34.0–39.2
	601–800	University of Ulsan	South Korea	21.8	24.4	66.2	65.1	23.7	34.0–39.2
	601–800	Ulster University	United Kingdom	19.9	22.3	50.5	39.0	77.6	34.0–39.2
	601–800	Umm Al-Qura University	Saudi Arabia	30.2	13.3	51.7	59.9	82.2	34.0–39.2
	NR	Paris Lodron Universität Salzburg	Austria	26.5	22.8	48.8	41.3	95.2	34.0–39.2
	601–800	Wenzhou University	China	14.9	11.2	86.3	40.6	27.8	34.0–39.2
	601–800	University of the Western Cape	South Africa	20.4	23.7	61.6	36.9	55.8	34.0–39.2
	501–600	University of the West of Scotland	United Kingdom	24.1	15.5	61.5	37.9	76.8	34.0–39.2
	601–800	University of Windsor	Canada	35.1	29.4	34.5	44.2	88.7	34.0–39.2
	1,001–1,200	University of Wolverhampton	United Kingdom	18.2	14.3	68.8	37.3	72.0	34.0–39.2
	601–800	University of Wuppertal	Germany	26.4	26.7	52.8	52.1	47.6	34.0–39.2
	601–800	Xi'an Jiaotong-Liverpool University	China	17.8	14.8	68.2	38.2	72.4	34.0–39.2
	401–500	Yokohama City University	Japan	26.4	10.2	82.8	47.6	25.2	34.0–39.2
	NR	Zhengzhou University	China	17.8	15.4	71.8	38.3	22.2	34.0–39.2

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Rank 2023	Rank 2022	Institution	Country/region	Teaching	Research	Citations	Industry income	International outlook	Overall score
801–1,000	801–1,000	University of the Aegean	Greece	17.3	19.3	53.7	62.8	34.7	29.8–33.9
	801–1,000	University of Agriculture, Faisalabad	Pakistan	24.0	17.4	55.3	46.7	45.0	29.8–33.9
	601–800	The University of Aizu	Japan	21.9	13.0	50.8	40.0	74.6	29.8–33.9
	601–800	The University of Alabama	United States	27.2	19.1	54.2	37.5	31.0	29.8–33.9
	1,001–1,200	Al-Azhar University	Egypt	14.9	9.6	63.3	37.0	48.7	29.8–33.9
	801–1,000	Al-Balqa Applied University	Jordan	12.9	11.7	69.8	41.2	41.3	29.8–33.9
	601–800	University of Alcalá	Spain	21.3	14.0	50.8	39.4	60.4	29.8–33.9
	1,001–1,200	Alexandria University	Egypt	18.6	13.7	56.2	40.7	46.1	29.8–33.9
	801–1,000	Aligarh Muslim University	India	35.7	12.9	51.1	40.0	27.7	29.8–33.9
	801–1,000	American University in Cairo	Egypt	24.4	26.6	32.5	40.4	64.4	29.8–33.9
	801–1,000	Anna University	India	21.3	26.6	53.5	45.2	16.5	29.8–33.9
	NR	University of Applied Sciences and Arts of Western Switzerland	Switzerland	21.0	11.4	41.2	40.4	90.5	29.8–33.9
	601–800	Aristotle University of Thessaloniki	Greece	19.0	16.2	56.9	41.4	40.4	29.8–33.9
	801–1,000	Athens University of Economics and Business	Greece	18.3	26.6	42.1	38.9	48.4	29.8–33.9
	501–600	Universidad Autónoma de Chile	Chile	13.2	10.2	72.4	36.9	49.7	29.8–33.9
	801–1,000	University of Aveiro	Portugal	25.9	25.7	40.2	39.0	50.4	29.8–33.9
	601–800	University of the Balearic Islands	Spain	19.2	16.3	51.2	37.0	49.6	29.8–33.9
	801–1,000	University of the Basque Country	Spain	21.5	21.8	51.7	39.6	44.5	29.8–33.9
	801–1,000	University of Bedfordshire	United Kingdom	17.9	15.2	49.7	37.1	79.2	29.8–33.9
	601–800	University of Beira Interior	Portugal	17.8	20.9	50.6	38.4	58.1	29.8–33.9
	801–1,000	University of Belgrade	Serbia	21.1	33.0	44.5	42.9	43.4	29.8–33.9
	801–1,000	Beni-Suef University	Egypt	17.9	8.7	67.8	36.9	45.9	29.8–33.9
	601–800	University of Bergamo	Italy	18.2	22.4	51.5	41.2	35.5	29.8–33.9
	801–1,000	Bharathiar University	India	36.6	27.6	30.4	37.5	23.7	29.8–33.9
	601–800	Bilkent University	Turkey	23.4	24.2	43.5	55.3	63.7	29.8–33.9
	801–1,000	Birla Institute of Technology and Science, Pilani	India	20.3	11.3	63.8	38.2	19.8	29.8–33.9
	801–1,000	Boğaziçi University	Turkey	24.4	24.6	39.8	54.1	41.8	29.8–33.9
	601–800	University of Brighton	United Kingdom	17.9	15.6	53.0	37.6	78.0	29.8–33.9
	601–800	Cairo University	Egypt	23.6	17.1	51.7	37.6	38.7	29.8–33.9
	601–800	University of Calabria	Italy	17.1	18.0	57.3	37.4	37.9	29.8–33.9
	801–1,000	Chapman University	United States	38.5	13.9	43.3	37.4	40.6	29.8–33.9
	601–800	Institute of Chemical Technology	India	38.1	19.9	35.6	42.5	15.1	29.8–33.9
	1,001–1,200	Chengdu University	China	16.5	10.6	67.5	42.7	22.4	29.8–33.9
	801–1,000	China University of Petroleum, Beijing	China	24.4	25.2	38.4	94.6	22.4	29.8–33.9
	801–1,000	Chulalongkorn University	Thailand	31.5	25.5	34.5	87.5	38.1	29.8–33.9
	801–1,000	Clemson University	United States	25.2	21.4	41.7	40.9	43.7	29.8–33.9
	801–1,000	University of Clermont Auvergne	France	18.7	16.3	48.9	38.2	61.2	29.8–33.9
	601–800	Coventry University	United Kingdom	18.8	14.4	52.4	37.1	94.0	29.8–33.9
	601–800	CY Cergy Paris University	France	22.7	24.6	35.9	42.4	88.2	29.8–33.9
	NR	University of Dayton	United States	32.6	25.4	29.5	43.4	33.1	29.8–33.9
	601–800	University of Deusto	Spain	18.9	20.3	49.9	46.1	47.4	29.8–33.9
	501–600	Diego Portales University	Chile	15.4	11.1	69.5	36.9	52.1	29.8–33.9
	801–1,000	Donghua University	China	20.7	19.6	55.1	65.0	32.2	29.8–33.9
	1,001–1,200	Duzce University	Turkey	20.4	14.6	56.7	83.5	26.6	29.8–33.9
	801–1,000	Edge Hill University	United Kingdom	17.7	14.2	58.0	37.0	49.1	29.8–33.9
	NR	University of Engineering and Technology, Peshawar	Pakistan	14.2	11.8	62.0	38.2	44.6	29.8–33.9
	601–800	Ewha Womans University	South Korea	32.3	33.1	26.2	70.4	44.3	29.8–33.9
	601–800	Federal University of Minas Gerais	Brazil	34.2	19.1	42.2	38.7	29.4	29.8–33.9
	601–800	Universidade Federal de Sergipe	Brazil	17.4	9.9	67.2	36.9	23.1	29.8–33.9
	NR	Firat University	Turkey	15.6	9.0	74.6	37.0	25.1	29.8–33.9
	801–1,000	Florida Agricultural and Mechanical University	United States	36.8	13.8	36.8	37.3	41.5	29.8–33.9

Rank 2023	Rank 2022	Institution	Country/region	Teaching	Research	Citations	Industry income	International outlook	Overall score
801–1,000	801–1,000	Florida Atlantic University	United States	21.5	19.3	46.0	42.6	48.5	29.8–33.9
(cont)	801–1,000	University of Foggia	Italy	17.9	21.3	55.7	38.8	26.3	29.8–33.9
	NR	University of the Free State	South Africa	18.1	17.6	49.4	40.1	47.3	29.8–33.9
	801–1,000	Fujita Health University	Japan	25.1	11.7	64.0	40.2	20.5	29.8–33.9
	801–1,000	Fuzhou University	China	17.2	14.4	60.1	55.0	29.0	29.8–33.9
	601–800	University of Girona	Spain	18.9	21.9	52.8	39.6	53.0	29.8–33.9
	601–800	Guangdong University of Technology	China	16.2	14.8	69.9	61.1	25.1	29.8–33.9
	801–1,000	Hiroshima University	Japan	32.5	23.5	29.7	49.6	38.6	29.8–33.9
	801–1,000	Indian Institute of Technology Patna	India	27.2	24.0	50.1	37.1	17.8	29.8–33.9
	601–800	Indian Institute of Technology Gandhinagar	India	34.0	27.5	34.2	44.8	23.9	29.8–33.9
	801–1,000	Universitat Internacional de Catalunya	Spain	17.6	15.6	57.0	40.2	63.7	29.8–33.9
	801–1,000	University of Ioannina	Greece	15.5	14.5	60.6	39.0	43.4	29.8–33.9
	601–800	ISCTE-University Institute of Lisbon	Portugal	24.0	32.0	36.0	41.8	55.5	29.8–33.9
	1,001–1,200	The Islamia University of Bahawalpur	Pakistan	21.4	12.1	62.9	37.1	43.2	29.8–33.9
	801–1,000	Istanbul Medeniyet University	Turkey	17.7	9.9	66.4	37.0	22.7	29.8–33.9
	601–800	ITMO University	Russian Federation	28.8	32.6	28.2	71.7	65.5	29.8–33.9
	801–1,000	Iuliu Haţieganu University of Medicine and Pharmacy Cluj-Napoca	Romania	20.7	9.2	61.7	37.3	52.1	29.8–33.9
	801–1,000	University of Jaén	Spain	18.5	17.6	54.7	37.1	44.7	29.8–33.9
	801–1,000	Juntendo University	Japan	33.5	18.6	47.3	52.9	22.8	29.8–33.9
	801–1,000	Kansas State University	United States	27.5	20.8	41.0	42.2	46.9	29.8–33.9
	801–1,000	Karlstad University	Sweden	17.3	14.4	54.6	37.5	41.2	29.8–33.9
	801–1,000	Kazan Federal University	Russian Federation	38.8	19.7	23.9	50.7	61.8	29.8–33.9
	601–800	Keio University	Japan	31.8	24.7	44.3	44.9	33.7	29.8–33.9
	601–800	Kerman University of Medical Sciences	Iran	30.6	9.9	51.2	41.0	20.8	29.8–33.9
	801–1,000	Kindai University	Japan	19.7	11.0	59.8	41.3	27.6	29.8–33.9
	1,001–1,200	King Faisal University	Saudi Arabia	18.4	9.4	55.4	43.0	74.1	29.8–33.9
	801–1,000	King Khalid University	Saudi Arabia	21.8	8.9	52.9	37.9	79.3	29.8–33.9
	801–1,000	King Mongkut's University of Technology Thonburi	Thailand	18.4	18.6	57.0	71.8	36.0	29.8–33.9
	801–1,000	Kingston University	United Kingdom	18.9	16.1	39.5	37.3	87.7	29.8–33.9
	1,001–1,200	KL University	India	16.9	9.6	68.4	37.2	17.2	29.8–33.9
	601–800	Kobe University	Japan	33.3	25.2	38.5	46.7	33.1	29.8–33.9
	801–1,000	Kurume University	Japan	23.0	11.0	60.5	39.4	23.8	29.8–33.9
	801–1,000	Kuwait University	Kuwait	18.2	10.2	61.5	38.9	68.5	29.8–33.9
	601–800	Kyungpook National University	South Korea	29.2	35.6	27.5	88.0	44.2	29.8–33.9
	1,001–1,200	University of Lahore	Pakistan	15.3	9.6	65.3	37.5	47.1	29.8–33.9
	801–1,000	Lakehead University	Canada	18.3	23.0	46.3	38.9	57.6	29.8–33.9
	601–800	University of La Laguna	Spain	18.2	14.2	55.2	38.4	47.9	29.8–33.9
	601–800	University of Latvia	Latvia	18.6	27.6	45.3	47.0	54.7	29.8–33.9
	801–1,000	Leeds Beckett University	United Kingdom	16.7	16.5	58.8	37.4	57.3	29.8–33.9
	601–800	Lithuanian University of Health Sciences	Lithuania	21.0	10.6	60.7	37.4	58.9	29.8–33.9
	801–1,000	University of Ljubljana	Slovenia	21.9	19.5	47.1	42.7	47.9	29.8–33.9
	801–1,000	University of Lleida	Spain	20.7	19.5	49.1	41.9	42.2	29.8–33.9
	1,001–1,200	Lovely Professional University	India	18.2	10.6	66.8	38.1	28.9	29.8–33.9
	601–800	Mae Fah Luang University	Thailand	15.5	12.4	58.8	38.8	47.0	29.8–33.9
	601–800	Mahidol University	Thailand	32.8	22.5	35.8	69.8	45.7	29.8–33.9
	601–800	Makerere University	Uganda	21.8	27.7	34.5	52.2	57.6	29.8–33.9
	NR	Universiti Malaysia Pahang	Malaysia	19.8	18.2	58.7	39.6	51.5	29.8–33.9
	801–1,000	University of Malta	Malta	19.6	16.7	53.4	37.5	62.6	29.8–33.9
	1,001–1,200	Manipal Academy of Higher Education	India	40.9	17.8	32.6	46.7	36.8	29.8–33.9
	801–1,000	Marquette University	United States	37.5	16.6	37.9	38.7	25.6	29.8–33.9
	801–1,000	Masaryk University	Czech Republic	23.9	29.7	34.0	38.1	66.7	29.8–33.9

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Rank 2023	Rank 2022	Institution	Country/region	Teaching	Research	Citations	Industry income	International outlook	Overall score
801–1,000	NR	Medical University of Gdańsk	Poland	25.3	9.3	55.7	37.0	41.9	29.8–33.9
(cont)	801–1,000	University of Memphis	United States	29.3	17.7	42.2	37.2	29.9	29.8–33.9
	801–1,000	University of Minho	Portugal	24.4	28.9	38.8	58.9	57.6	29.8–33.9
	1,001–1,200	Mississippi State University	United States	22.8	18.5	44.9	40.6	41.6	29.8–33.9
	601–800	University of Missouri-St Louis	United States	33.1	18.8	44.2	47.4	41.7	29.8–33.9
	601–800	Montana State University	United States	21.0	17.7	57.6	45.5	36.9	29.8–33.9
	601–800	Monterrey Institute of Technology	Mexico	20.4	19.6	52.3	60.9	57.7	29.8–33.9
	801–1,000	University of Namur	Belgium	20.6	21.2	46.5	45.0	67.9	29.8–33.9
	NR	Nanjing Forestry University	China	16.6	9.3	67.5	41.1	22.7	29.8–33.9
	801–1,000	Nanjing University of Information Science and Technology	China	17.7	16.1	61.0	44.2	33.6	29.8–33.9
	801–1,000	Nanjing Normal University	China	21.7	13.7	58.7	52.7	24.9	29.8–33.9
	801–1,000	Nanjing Tech University	China	19.1	13.7	58.9	61.3	30.1	29.8–33.9
	601–800	National Institute of Applied Sciences of Lyon (INSA Lyon)	France	32.4	22.9	30.8	77.4	70.8	29.8–33.9
	NR	École Nationale des Travaux Publics de l'État (ENTPE)	France	31.3	34.7	24.9	77.2	62.1	29.8–33.9
	801–1,000	National University of Sciences and Technology	Pakistan	21.5	17.7	50.9	39.2	47.4	29.8–33.9
	801–1,000	National Sun Yat-Sen University	Taiwan	25.1	33.2	27.1	54.8	44.3	29.8–33.9
	601–800	National Taiwan Normal University	Taiwan	28.0	34.4	28.8	74.4	51.8	29.8–33.9
	801–1,000	National Technical University of Athens	Greece	23.3	21.6	43.9	99.1	38.1	29.8–33.9
	NR	National Institute of Technology Hamirpur	India	17.0	16.6	72.1	39.2	14.9	29.8–33.9
	1,001–1,200	National Institute of Technology, Tiruchirappalli	India	30.2	15.9	49.8	39.2	17.6	29.8–33.9
	801–1,000	The New School	United States	25.2	14.5	47.2	37.0	53.0	29.8–33.9
	801–1,000	New Mexico State University (Main campus)	United States	23.2	22.2	44.8	39.9	37.5	29.8–33.9
	601–800	Nippon Medical School	Japan	26.8	9.5	64.4	37.3	18.4	29.8–33.9
	801–1,000	University of North Carolina at Greensboro	United States	25.1	19.0	48.3	37.3	25.9	29.8–33.9
	801–1,000	Northeastern University, China	China	27.1	24.8	31.3	93.0	37.3	29.8–33.9
	801–1,000	Northeast Normal University	China	25.0	13.9	54.6	40.2	25.0	29.8–33.9
	801–1,000	University of Northern British Columbia (UNBC)	Canada	19.1	21.5	45.2	37.4	45.9	29.8–33.9
	601–800	Northern Illinois University	United States	28.3	16.7	47.1	37.6	51.2	29.8–33.9
	801–1,000	Novosibirsk State University	Russian Federation	39.2	34.0	16.6	39.2	46.5	29.8–33.9
	601–800	Ohio University (Main campus)	United States	27.6	18.8	55.7	38.0	29.9	29.8–33.9
	801–1,000	Old Dominion University	United States	23.2	19.5	47.4	36.9	31.7	29.8–33.9
	1,001–1,200	Ozyegin University	Turkey	17.2	20.1	46.6	41.2	48.8	29.8–33.9
	NR	Pablo de Olavide University	Spain	17.4	16.7	51.2	37.5	51.0	29.8–33.9
	601–800	University of Palermo	Italy	17.8	21.9	56.3	37.5	32.0	29.8–33.9
	601–800	Panjab University	India	30.5	14.6	60.0	37.5	17.1	29.8–33.9
	601–800	Panthéon-Sorbonne University – Paris 1	France	34.5	32.1	18.4	37.1	62.8	29.8–33.9
	601–800	Parthenope University of Naples	Italy	16.7	20.3	63.0	38.1	27.8	29.8–33.9
	801–1,000	Universiti Pendidikan Sultan Idris	Malaysia	28.4	25.5	33.9	99.9	61.7	29.8–33.9
	601–800	University of Peshawar	Pakistan	30.5	10.8	53.2	37.0	42.2	29.8–33.9
	601–800	University of the Philippines	Philippines	21.4	16.6	62.5	41.4	34.6	29.8–33.9
	601–800	Universitat Politècnica de Catalunya	Spain	27.3	19.3	43.8	43.5	58.7	29.8–33.9
	801–1,000	Polytechnic University of Valencia	Spain	25.7	21.8	38.4	48.9	51.2	29.8–33.9
	801–1,000	Pontifical Catholic University of Rio de Janeiro (PUC-Rio)	Brazil	28.1	25.6	30.9	94.6	37.4	29.8–33.9
	801–1,000	Pontifical Catholic University of Rio Grande do Sul (PUCRS)	Brazil	25.6	17.1	50.2	41.7	29.6	29.8–33.9
	501–600	Pontifical Javeriana University	Colombia	17.5	11.1	68.7	36.9	43.6	29.8–33.9
	601–800	University of Pretoria	South Africa	27.9	31.6	35.3	44.2	54.9	29.8–33.9
	NR	Princess Nourah bint Abdulrahman University	Saudi Arabia	22.9	13.6	46.3	45.6	85.5	29.8–33.9
	1,001–1,200	University of the Punjab	Pakistan	24.2	14.0	52.1	37.5	39.1	29.8–33.9
	801–1,000	University of Rennes 1	France	27.5	17.0	43.2	40.9	56.9	29.8–33.9
	601–800	University of Rhode Island	United States	23.3	18.0	56.0	37.2	44.7	29.8–33.9
	NR	Rhodes University	South Africa	24.8	13.4	43.4	60.9	62.0	29.8–33.9

Rank 2023	Rank 2022	Institution	Country/region	Teaching	Research	Citations	Industry income	International outlook	Overall score
801–1,000	801–1,000	University of Roehampton	United Kingdom	20.1	21.4	39.5	37.3	81.2	29.8–33.9
(cont)	601–800	University of Rome III	Italy	22.1	24.1	42.2	41.8	40.7	29.8–33.9
	601–800	Roskilde University	Denmark	19.5	32.1	41.7	43.6	59.8	29.8–33.9
	601–800	Saint Petersburg State University	Russian Federation	46.3	39.7	11.9	39.7	45.7	29.8–33.9
	801–1,000	University of Salamanca	Spain	26.9	20.8	38.4	39.4	55.5	29.8–33.9
	801–1,000	University of Salento	Italy	26.1	19.3	53.2	39.8	29.6	29.8–33.9
	801–1,000	University of Salford	United Kingdom	18.0	14.9	46.1	38.0	74.3	29.8–33.9
	801–1,000	University of Science and Technology Beijing	China	27.4	29.8	41.0	59.5	22.3	29.8–33.9
	1,001–1,200	Sechenov University	Russian Federation	27.3	15.7	38.8	42.7	56.7	29.8–33.9
	NR	University of La Serena	Chile	12.7	9.3	65.6	36.9	48.0	29.8–33.9
	801–1,000	Shahid Beheshti University	Iran	27.1	27.4	36.2	56.3	23.7	29.8–33.9
	801–1,000	Shantou University	China	19.4	15.5	53.7	40.6	33.9	29.8–33.9
	801–1,000	Sheffield Hallam University	United Kingdom	18.7	14.3	60.8	37.1	57.3	29.8–33.9
	801–1,000	Shiraz University	Iran	28.3	24.4	37.1	49.5	24.8	29.8–33.9
	801–1,000	Shiraz University of Medical Sciences	Iran	34.7	11.0	52.2	37.0	21.3	29.8–33.9
	601–800	University of Siegen	Germany	21.8	27.3	41.4	40.6	52.3	29.8–33.9
	801–1,000	University of South Bohemia in České Budějovice	Czech Republic	19.4	17.1	46.9	36.9	51.2	29.8–33.9
	801–1,000	South China Normal University	China	21.1	19.2	51.7	53.4	32.9	29.8–33.9
	NR	Southern Illinois University Carbondale	United States	35.2	23.9	35.2	47.1	33.9	29.8–33.9
	1,001–1,200	South Ural State University	Russian Federation	17.0	13.3	64.9	41.6	41.6	29.8–33.9
	501–600	Suez Canal University	Egypt	18.1	8.2	64.4	39.1	47.5	29.8–33.9
	NR	Sunway University	Malaysia	20.4	12.0	58.0	37.6	73.2	29.8–33.9
	801–1,000	Symbiosis International University	India	18.6	10.2	73.4	37.3	28.7	29.8–33.9
	NR	Taibah University	Saudi Arabia	15.2	9.0	55.1	37.2	74.7	29.8–33.9
	1,001–1,200	Tanta University	Egypt	19.1	8.4	62.8	37.1	42.9	29.8–33.9
	801–1,000	University of Technology, Iraq	Iraq	22.0	9.5	60.0	39.6	24.6	29.8–33.9
	801–1,000	Universiti Tenaga Nasional (UNITEN)	Malaysia	20.7	15.0	51.1	77.9	52.6	29.8–33.9
	801–1,000	University of Texas at El Paso	United States	26.6	31.7	32.8	36.9	41.6	29.8–33.9
	601–800	Texas Tech University	United States	29.7	19.2	42.9	37.6	50.5	29.8–33.9
	801–1,000	University of Thessaly	Greece	16.0	14.4	61.3	38.7	37.8	29.8–33.9
	801–1,000	Toronto Metropolitan University	Canada	19.7	30.8	36.5	40.5	59.0	29.8–33.9
	801–1,000	Tribhuvan University	Nepal	12.8	7.9	71.2	37.0	45.4	29.8–33.9
	501–600	University of Urbino Carlo Bo	Italy	16.2	17.1	59.1	42.7	49.3	29.8–33.9
	801–1,000	Vilnius University	Lithuania	21.4	18.7	47.3	45.9	55.5	29.8–33.9
	801–1,000	VIT University	India	22.9	14.6	52.9	38.9	31.5	29.8–33.9
	601–800	University of Warsaw	Poland	26.8	27.4	42.6	37.8	43.0	29.8–33.9
	601–800	Wenzhou Medical University	China	17.7	14.2	67.1	38.5	26.5	29.8–33.9
	NR	University of Winchester	United Kingdom	16.7	15.7	61.1	37.0	52.8	29.8–33.9
	601–800	University of Wisconsin-Milwaukee	United States	22.9	22.2	55.8	38.0	33.4	29.8–33.9
	601–800	Worcester Polytechnic Institute	United States	23.6	19.3	53.8	38.5	52.2	29.8–33.9
	601–800	University of Wyoming	United States	27.6	14.4	57.2	39.9	32.3	29.8–33.9
	1,001–1,200	Yangzhou University	China	23.9	18.4	51.6	71.9	38.6	29.8–33.9
	801–1,000	Yeungnam University	South Korea	20.2	15.3	54.0	42.7	43.3	29.8–33.9
	801–1,000	Zagazig University	Egypt	13.9	8.3	69.5	36.9	43.5	29.8–33.9
	801–1,000	Zewail City of Science and Technology	Egypt	23.4	16.4	56.6	41.0	31.4	29.8–33.9
	801–1,000	Zhejiang University of Finance and Economics	China	14.0	11.3	64.8	38.6	25.2	29.8–33.9

NR = not ranked. As part of our *THE* statement on Ukraine published on 2 March 2022, we committed to do whatever we could to "protect the interests of Ukraine's universities at a time of such huge disruption and distress". We ensured that those that would appear in any of our rankings would have their standing protected in this year's ranking, regardless of their ability to submit data.
In order to support Ukrainian universities, we have taken the following steps:
1. For universities that submitted data last year but that were not able to submit data this year, we used last year's data submission to calculate this year's ranking.
2. The ranking positions of all universities that meet our criteria have been processed as normal. However, after this we have considered the positions of Ukrainian universities in light of our published commitment.
3. For Ukrainian universities who rank lower in the 2023 ranking than in the 2022 ranking we have moved them to the ranking band they were in in last year's table. We have done this in the same way that we would deal with a data correction – no other university will be demoted as a result of this action. The overall and pillar scores of these Ukrainian universities will not be changed, which can result in a discrepancy between the scores and the ranking.
As published in our *THE* statement on Ukraine on 2 March 2022, Russian universities have been given less prominence in our rankings. Their names are greyed out in the table (print and online), and their university profiles are not available on the website.

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THE's SDG Impact Dashboard is a vital tool for universities' sustainability work that provides rich data on performance and insight into best practice from around the world.

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SIKSHA 'O' ANUSANDHAN

Empowering students for a brighter future

Siksha 'O' Anusandhan, popularly known by its acronym 'SOA', is one of the largest multi-disciplinary Universities of India. It has been recognized by University Grants Commission (UGC), the apex body of the Government of India to grant approval or recognition to higher educational institutions. It offers Undergraduate, Post-Graduate and Research Programmes on Engineering & Technology, Medical Sciences, Dental Sciences, Pharmaceutical Sciences, Nursing, Management Studies, Hospitality & Tourism Management, Law, Biotechnology, Agricultural Sciences, and Veterinary Sciences.

It boasts itself as one of the preferred destinations of higher education in India, as about 14000 students and 1200 faculty members pursue their career ambitions at the university, which is a remarkable feat in Indian Education Setup.

The university has been accredited with the highest-grade A++ by National Assessment and Accreditation Council (NAAC), the only institutional accreditation agency of Government of India for higher educational institutions and Conferred with Category-I Graded Autonomy Status by University Grants Commission (UGC), Govt. of India.

Ranked 16th Best University in India by National Institutional Ranking Framework (NIRF) in 2022, a ranking exercise done by Ministry of Education, Government of India. The other discipline-wise ranks of NIRF-2022 are 27th in Engineering and Technology; 18th in Medical; 10th in Dental; 9th in Law.

Moreover, the university has also been ranked globally by the prestigious Times Higher Education (THE) World University Rankings, consistently, in the last few years.

Engineering programs are accredited by National Board of Accreditation (NBA) and American Board for Engineering and Technology (ABET), USA.

The Agricultural programme is accredited by Indian Council of Agricultural Research (ICAR), Government of India.

The Faculty of Medical Sciences has been accredited by National Accreditation Board for Hospitals & Healthcare Providers (NABH), Government of India, which is a constituent Board of Quality Council of India set up to establish and operate accreditation programme for healthcare organizations. The Medical Laboratories are accredited by National Accreditation Board for Testing and Calibration Laboratories (NABL), Government of India.

Remarkable extension activities & social outreach programmes.

RESEARCH EXCELLENCE

SOA has created a congenial atmosphere for focused research on its identified innovative and emerging thrust areas through a number of state-of-the-art multi-disciplinary research centres and research labs equipped with high-end research equipment.

SOA has been declared as 'Scientific and Industrial Research Organizations (SIRO)' by Department of Scientific and Industrial Research (DSIR), Government of India. The synchronized efforts of its members have yielded more than 9500 Scopus and 5500 Web of Science indexed publications with h-index of 86 & 78 respectively. The university has filed 350 patents out of which 24 patents has already been granted. Noteworthy to mention that 13 of SOA's researchers had found place in Stanford University's prestigious world ranking list of 2% scientists.

Major Thrust Areas of Research include Nano Science and Nano Materials; Multi-functional materials; Theoretical High Energy Physics Phenomenology; String Theory and Phenomenology; Molecular Cloning and Characterization of Novel Genes; Clean Energy Systems For Sustainable Development – Renewable Energy Integration In Smart Grid / Micro-grid / Off-grid Systems; Biomedical Signal Image Analysis and Salient Object Detection; Bio Prospecting of Medicinal Plants; Integrating Modern Medicine with Traditional Indian Medicinal Plants; Bio-materials and Tissue Regeneration; Head and Neck Cancer; Cyber Security; Artificial Intelligence; Data Science; Deep Learning; Bioremediation of Industrial Wastewater; Micro Array Data Analysis Using Data Mining Strategies; Development of Drugs and Drugs products for CNS and Metabolic Disorders; Study of Emerging Infectious Diseases in Eastern India; Improving the Quality of health care in health care setup; Innovative Approaches in infertility management; Bio-Fuels and Bio-Processing; Investigation of Legal Aspects in Health Sciences; Urban Climate; Integrated Coastal Zone Management; Smart Agriculture, etc.

STUDENT CLUBS AND CHAPTERS

The students get the opportunity to showcase and hone their skill sets through the different student clubs such as Aero Club ITER, Danza, Fashion Club, ITER Robotics Club, Jaago, Srishti, Toneelstuk & Virtual Showreel, and student chapters such as ASME : American Society of Mechanical Engineers; ASCE : American Society of Civil Engineers; ACM : Association of Computing Machinery; IEEE : Institute of Electrical & Electronics Engineers; IET : The Institute of Engineering Technology; IIIE : Indian Institute of Industrial Engineering; SAE : Society of Automotive Engineers.

Learning Resources include State-of-the-Art infrastructure, modern teaching tools and pedagogy, competent faculty, adequate e-resources & library facilities provide an academic ambience conducive to attain the objectives set out in the mission and vision.

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An open-and-shut case

Cambridge's outgoing vice-chancellor Stephen Toope speaks to Rosa Ellis about the highs and lows of the past five years, and universities' soft power

Governments should stop picking on elements of higher education because it's politically salient to do so and recognise institutions such as Cambridge for the "soft power" asset they are, says Stephen Toope.

The outgoing vice-chancellor of the second-oldest university in the English-speaking world sat down with *Times Higher Education* to reflect on what has changed in the sector since he took up his post five years ago. In a wide-ranging interview he reveals how it felt being pilloried in the press, his views on collaborating with China, and the dangers of limiting international collaboration.

Political exploitation of the "culture wars" is one of the more disturbing trends to emerge during his time at Cambridge, Toope says. He finds the "pervasive" discussions "frustrating" and believes they obstruct the real conversations that should be taking place in the halls of Westminster and elsewhere.

"There's a fundamental balance to be struck in any community between freedom and autonomy on the one hand, and equality and social cohesion on the other. That's a debate we should be having."

Toope himself has arguably been dragged into more culture war battles than any other UK v-c.

From a clash over his introduction of software to allow students to anonymously accuse faculty members of "racism, discrimination and microaggressions", which was swiftly dropped, to attacks over the rescinding of a research fellowship to controversial academic Jordan Peterson, and a proposal to introduce guidelines requiring opinions to be "respectful" of others that caused outrage and which was ultimately changed to "tolerant".

Toope may have been scarred by the culture wars, but he doesn't appear battle-weary; he is sanguine about the attacks. "I think one has to, first off, have a certain degree of, as the French say, sangfroid about these things," he says. "[Oxford and Cambridge] are always on the front lines, whether they want to be or not. What happens is, of course, caricatures get developed of positions. Certainly, I was accused of things I never believed."

He is referring to his portrayal as anti-free speech, and defends his record: "If anyone looked back, I actually issued the first free speech statement of a university leader in Canada 15 years ago, because I'm so committed to the importance of free speech within universities." He adds that students and staff must feel able to contribute without being attacked "in ways that actually undermine their ability to participate in the conversation".

At times the news coverage veered close to the personal, including friendly fire from several Cambridge academics criticising him in the press, but Toope appears to have managed to keep a healthy distance. "You have to dissociate the personal from the institutional to some degree," he says. "Frankly, it was clear that some of this happened because I was at a place like Cambridge, I mean, no one would have cared if I was at certain other places."

Toope believes the culture wars are happening now, at this particular point in history, because of the rise in populist politics: the trend is "connected to some of the forces that propelled Brexit forward, some of the courses that propelled President Trump forward" and fuelled by a sense of disconnect between elites and the rest of the population.

"It's not by accident that this has emerged in the two countries where there's been the weakest performance on Gini coefficients," the measure of wealth inequality, he says, referring to the UK and the US.

> " There's a fundamental balance to be struck in any community between freedom and autonomy on the one hand, and equality and social cohesion on the other "

"Those are the two places where this has really reached its apogee."

Normal people are frustrated by the growing wealth of elites, and that frustration has been exploited "because it was politically expedient to do so".

In the UK, one issue that has become unhelpfully politicised is around limiting the number of people who go to university. "In other parts of the world: Korea, Canada, Australia, they're trying to increase the number of people going to university because they see it as an opportunity to change the economic and social future for individuals and the country," he points out.

Another example is the UK government's Higher Education (Freedom of Speech) Bill. "It's simply an unnecessary piece of legislation," Toope says. He believes free speech on campus in the UK is not a problem at all, and creating more legislation may even inhibit free speech.

> "
> Universities could actually be a real asset in projecting an image of the UK that is forward-thinking, outward-facing, innovative
> "

Toope was born in Montreal, Canada and studied at Harvard and McGill, before completing his PhD at Cambridge. His research area is international law and human rights and his first v-c role was at the University of British Columbia from 2006 to 2014.

He says that parachuting in to Cambridge from Canada was beneficial because it made him an unknown quantity: "It makes people perhaps want to discover and listen in a different way than they would if they think they already know you."

Being a globe-trotting academic also means Toope has seen Cambridge from an international perspective, and he thinks the government is missing a trick. Oxford and Cambridge, along with the royal family, are the biggest UK brands, he says, and yet "you tend to get the sense in which some people would love to just undermine what is one of the sources of soft power [for the UK]".

As v-c of Cambridge, he has travelled the world (pre-Covid at least) and enjoyed unprecedented access to senior government, civic and business leaders, something the government could be harnessing. They "could actually see us more as a partner", he says. "We could actually be a real asset in projecting an image of the UK that is forward-thinking, outward-facing, innovative."

Academic collaboration with the rest of the world must also be strengthened, not

obstructed, says Toope, and he is concerned it is moving in the wrong direction.

The UK has the specific barrier of access to Horizon Europe (still unknown at the time of going to press. Toope is not optimistic). "Creating national funding mechanisms, rather than funding mechanisms that are shared across geographies, will make it harder to collaborate," he says.

For the rest of the world, geopolitical tensions are impeding collaboration. "It's a huge problem if we can't collaborate, especially with China." The sheer scale of the country's investment means it is now a genuine science power. "No single institution, no single country, even the biggest, has the capacity to do all of the work that's necessary to advance really complicated issues like climate change, infectious disease, etc. We need to collaborate."

And the risks? Of course we have to mitigate them, and we can, he says. Cambridge has developed a set of international principles to shape collaboration and provide online training for staff asking them to consider a range of issues, from intellectual property to academic freedom, safety and security.

The difficult area is, he concedes, dual-use technology. "Something that could seem as if it is completely benign might actually not be benign, if applied in a different way. So it's a complicated assessment." Nevertheless, the risk is necessary. "There's a difference between being rigorous in the analysis and saying we don't think we can work with you ever."

There is also a bigger picture to consider in relation to global science, Toope warns. "It isn't inevitable that we retain the position that we currently occupy. If other

people work harder, if other people invest better and if other people develop connections that we don't, then I think we could find ourselves starting to lose the edge that the West has had for a long, long time."

He adds: "Of course, that's exactly what other countries want to happen in the sense that they want to become the sources of innovation and the sources of discovery. And at some level, that's a good thing. But if we just let that happen, that would be tremendously damaging for our society."

Despite negative headlines and speculation that Toope is ending his potential seven-year term two years early because he couldn't handle the media criticism, he says he is leaving satisfied that he hasn't left any unfinished business, and his record does not point to a failed term.

In 2017, when Toope joined Cambridge, the university was ranked fourth in the *THE* World University Rankings, and it is now joint third. During his tenure he has increased philanthropic donations, launched initiatives to tackle sexual misconduct on campus, introduced wellness coordinators at each college to improve mental health, established a foundation year to enable more disadvantaged students to attend and increased participation of students from state schools from 64 to 72 per cent. He also steered the university through the pandemic.

What, then, is the secret to running a top university? Toope says it is focusing on a limited number of core objectives, and choosing objectives that lead to further change. Asking "what are the facilitating changes that allow other changes to take place, or other opportunities to be grasped?"

One example he has worked on at Cambridge, which he describes as "prosaic" but crucial, was improving financial transparency. "It was very difficult when I arrived at Cambridge to actually even understand our budget, and even understand our financial position, because of the complexity of very old systems that had sort of grown up over time."

Now that he has sorted Cambridge's accounting, he will be hopping back over the pond to take up the role of president and CEO of the Canadian Institute for Advanced Research. For now, it seems Toope's culture war is over. ●

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Embrace 'risk-takers'

Stories of job creation are more likely to bolster support for international students, as Imperial's departing president, Alice Gast, tells Jack Grove

With electricity and gas bills soaring, access to Horizon Europe uncertain and tuition fees for domestic students frozen yet again, the £15 billion a year in fee income from international students has never been more important to UK universities.

But neither that enormous sum, nor the additional £13 billion a year they spend outside campus, based on Universities UK data, may be the best argument when it comes to convincing ministers or the public about why international students are so important, believes Alice Gast, who recently stepped down as president of Imperial College London after eight years leading the revered British research powerhouse.

Instead, Gast, a US-born chemical engineer who has taught at Princeton and Stanford universities, as well as the Massachusetts Institute of Technology (MIT), where she was vice-president for research, would prefer to see UK universities highlight the entrepreneurial impact of their foreign students and alumni – in particular, how they create jobs on British soil at scale, often in emerging high-tech industries or in areas in need of economic redevelopment.

"International students don't just contribute economically during their studies or become brilliant diplomats for British science if they return home – those who stay here will often start companies and create jobs," explains Gast, now emerita professor of chemistry at Imperial, where she will focus on supporting university spin-out companies and philanthropy.

"These graduates create far more jobs than they consume – maybe we should be expressing this kind of value to the economy rather than talking about the resources which they pay into universities in terms of fees," she continues.

That contribution is embodied in one of Imperial's student start-ups, Puraffinity, a water-purification company set up in 2015 whose founders included three international students, including its Danish CEO, Henrik Hagemann, and board member Gabriella Santosa, originally from Indonesia.

"It's gone from winning our innovation prize and using start-up space on our South Kensington campus, then moving to bigger premises on our White City campus," explains Gast of the company, which won a £1.5 million Innovate UK grant in April, following a £1.2 million Horizon grant and almost £3 million in venture capital funding in 2019. "Now they are building a plant in the north of England, which is exactly how research in London might help the government's levelling-up agenda," she adds.

While detailed economic analyses of how international students directly support the UK's higher education and research system (for every 14 international students studying in the UK, the economy benefits from £1 million in spending, says UUK and Higher Educa-

> "International students don't just contribute economically during their studies or become brilliant diplomats for British science – those who stay here will often start companies"

tion Policy Institute-commissioned research published in September 2021), these tales of entrepreneurial success might cut through more effectively, insists Gast.

"The fact that most tech companies in Silicon Valley have a founder who was an international student is well known and much celebrated," she says, with the obvious example being Elon Musk, the maverick South African-born CEO behind PayPal, Tesla and SpaceX who is now the world's richest man, worth an estimated $277 billion (£226 billion). More pertinently, his companies directly employ 110,000 employees, mainly in the US. "We could do a much better job of celebrating these people who stay and contribute so much to society," she adds.

That so many overseas-born alumni end up creating companies in emerging technologies is no fluke, either, believes Gast. "To be an entrepreneur, you need to be a risk-taker," she explains. "But international students are already risk-takers – in that they have come to a completely new country to study – and will often be ready to seize an opportunity when it presents itself. Those personal traits of being open to new things and taking risks are what makes entrepreneurs successful," Gast continues.

Her impassioned call to recognise the broader value of international students reflects one of the major political battles fought by the sector in the first five years of Gast's term of office: the campaign to reinstate the two-year post-study work visa, which was finally reinstated in 2020-21, having been scrapped by then home secretary Theresa May in 2012.

That policy win – combined with the news this year that the UK had hit its 600,000 international student target a decade earlier than planned – may suggest things are rosy on the foreign recruitment front. That recruitment may, however, prove difficult to sustain, let alone grow, given that the effects of the pandemic (travel restrictions into and from China continue) and Brexit are still not clear. For instance, about 153,000 students in 2020-21 came from the European Union and mostly paid lower tuition fees in line with domestic students, but future cohorts will be charged the far higher fees paid by those from China, India and other non-EU countries.

But the likely loss of access to Horizon Europe, the EU's €90 billion (£77 billion) flagship research initiative, and the world-class European PhDs and postdocs attached to the scheme, is also a particular worry for Gast, whose institution has more than 2,000 staff from Europe. "It's really unfortunate that we are having such problems with association to Horizon Europe," says Gast, who remarks that the "European Research Council has been really essential for building new relationships and links across borders".

"Higher education has such an international culture, so it's important that we keep our doors open and collaborate across borders where we can," she adds.

Fostering these international links with academia, business and charitable donors has been a major

part of Gast's remit as president since starting at Imperial in 2014. Under the US-style leadership model introduced on her arrival, the former Lehigh University president was asked to lead on external affairs at home and abroad, while the newly created role of provost would deliver the college's "core academic mission" of research and education.

While Gast has done her fair share of globetrotting in the job, it seems she is equally, if not more, proud of her efforts in expanding Imperial's engagement with the local community – not perhaps a role traditionally associated with a scientific powerhouse whose main campus is located in South Kensington, one of London's richest areas.

"I came from Lehigh University, which is found in Bethlehem, Pennsylvania – which was a steel community that made enough for

a battleship a day in World War Two, but those jobs have gone," explains Gast.

"My time at Lehigh showed me what was possible when working with the local community – universities are anchor institutions and cannot be ivory towers, however academically strong they are," she adds.

That engagement has ranged from opening up Imperial's plaza to draw in visitors to the many museums in South Kensington to going further afield. Imperial is due to open a new maths school in Finchley, north London, for sixth-formers aged 16 to 19, while it has also partnered with the University of Cumbria to launch a new graduate medical school in the northwest of England, which will open in 2025.

Opening Imperial's White City campus in west London (pictured left) in 2016 has been particularly important in furthering that engagement, says Gast. "As we moved into a deprived neighbourhood, it was easier to bring schoolchildren into our campus and show them our maker spaces and what we do," she says, adding: "There was no point in building a new campus where the local community did not feel welcome."

That activity may seem peripheral to Imperial's core mission as an elite global university, but it may assist in unseen ways, such as efforts to raise charitable funding, says Gast. Even in the US, where alumni donate to their alma mater more frequently, there is a growing shift from "loyalty based" giving to "impact based" giving, with potential donors more happy to dig deep if they can see how their funds might help specific school outreach projects, university start-ups or research initiatives.

"Donors are becoming much more focused on making sure their gifts have the highest impact and will often want to meet academics in the place where the magic of research happens."

Imperial's status as a globally elite science university may make it an unlikely champion of inclusivity, but Gast clearly sees that a spirit of openness – whether it is donors, international students or local schoolchildren – is entirely in sync with the university's commitment to excellence. In many cases, it may even push it to new heights in unexpected areas. ●

> **"** We could do a much better job of celebrating these people who stay and contribute so much to society **"**

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The *Times Higher Education* World University Rankings are the only global performance tables that judge research-intensive universities across all their core missions: teaching, research, knowledge transfer and international outlook. We use 13 carefully calibrated performance indicators to provide the most comprehensive and balanced comparisons, trusted by students, academics, university leaders, industry and governments.

The performance indicators are grouped into five areas: **TEACHING** (the learning environment); **RESEARCH** (volume, income and reputation); **CITATIONS** (research influence); **INTERNATIONAL OUTLOOK** (staff, students and research); and **INDUSTRY INCOME** (knowledge transfer).

Exclusions

Universities can be excluded from the World University Rankings if they do not teach undergraduates, or if their research output amounted to fewer than 1,000 relevant publications between 2017 and 2021 (with a minimum of 150 a year). Universities can also be excluded if 80 per cent or more of their research output is exclusively in one of our 11 subject areas.

Data collection

Institutions provide and sign off their institutional data for use in the rankings. On the rare occasions when a particular data point is not provided, we enter a conservative estimate for the affected metric. By doing this, we avoid penalising an institution too harshly with a "zero" value for data that it overlooks or does not provide, but we do not reward it for withholding them.

Getting to the final result

Moving from a series of specific data points to indicators, and finally to a total score for an institution, requires us to match values that represent fundamentally different data. To do this, we use a standardisation approach for each indicator, and then combine the indicators in the proportions shown to the right.

The standardisation approach we use is based on the distribution of data within a particular indicator, where we calculate a cumulative probability function, and evaluate where a particular institution's indicator sits within that function.

For all indicators except for the Academic Reputation Survey, we calculate the cumulative probability function using a version of Z-scoring. The distribution of the data in the Academic Reputation Survey requires us to add an exponential component.

Teaching
(the learning environment)

- 30%
- Reputation survey 15%
- Staff-to-student ratio 4.5%
- Doctorate-to-bachelor's ratio 2.25%
- Doctorates-awarded-to-academic-staff ratio 6%
- Institutional income 2.25%

The most recent Academic Reputation Survey (run annually, this year conducted by *THE*) that underpins this category was carried out between November 2021 and March 2022. It examined the perceived prestige of institutions in teaching. We have run the survey to ensure a balanced spread of responses across disciplines and countries. Where disciplines or countries were over- or underrepresented, *THE*'s data team weighted the responses to fully reflect the global distribution of scholars. The 2022 data are combined with the results of the 2021 survey, giving more than 40,000 responses.

As well as giving a sense of how committed an institution is to nurturing the next generation of academics, a high proportion of postgraduate research students also suggests the provision of teaching at the highest level that is thus attractive to graduates and effective at developing them. This indicator is normalised to take account of a university's unique subject mix, reflecting that the volume of doctoral awards varies by discipline.

Institutional income is scaled against academic staff numbers and normalised for purchasing-power parity (PPP). It indicates an institution's general status and gives a broad sense of the infrastructure and facilities available to students and staff.
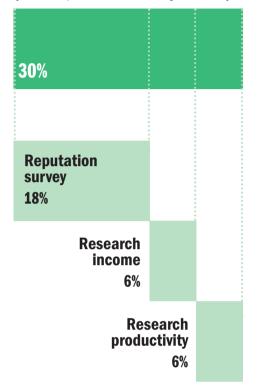
Research
(volume, income and reputation)

30%

Reputation survey 18%

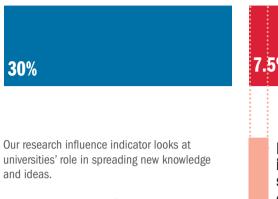**Research income 6%**

Research productivity 6%

The most prominent indicator in this category looks at a university's reputation for research excellence among its peers, based on the responses to our annual Academic Reputation Survey (see left).

Research income is scaled against academic staff numbers and adjusted for purchasing-power parity (PPP). This is a controversial indicator because it can be influenced by national policy and economic circumstances. But income is crucial to the development of world-class research, and because much of it is subject to competition and judged by peer review, our experts suggested that it was a valid measure. This indicator is fully normalised to take account of each university's distinct subject profile, reflecting the fact that research grants in science subjects are often bigger than those awarded for the highest-quality social science, arts and humanities research.

To measure productivity we count the number of publications published in the academic journals indexed by Elsevier's Scopus database per scholar, scaled for institutional size and normalised for subject. This gives a sense of the university's ability to get papers published in quality peer-reviewed journals. Last year, we devised a method to give credit for papers that are published in subjects where a university declares no staff.

Citations
(research influence)

30%

Our research influence indicator looks at universities' role in spreading new knowledge and ideas.

We examine research influence by capturing the average number of times a university's published work is cited by scholars globally. This year, our bibliometric data supplier Elsevier examined more than 121 million citations to 15.5 million journal articles, article reviews, conference proceedings, books and book chapters published over five years. The data include more than 27,100 academic journals indexed by Elsevier's Scopus database and all indexed publications between 2017 and 2021. Citations to these publications made in the six years from 2017 to 2022 are also collected.

The citations help to show us how much each university is contributing to the sum of human knowledge: they tell us whose research has stood out, has been picked up and built on by other scholars and, most importantly, has been shared around the global scholarly community to expand the boundaries of our understanding, irrespective of discipline.

The data are normalised to reflect variations in citation volume between different subject areas. This means that institutions with high levels of research activity in subjects with traditionally high citation counts do not gain an unfair advantage.

We have blended equal measures of a country-adjusted and non-country-adjusted raw measure of citations scores.

In 2015-16, we excluded papers with more than 1,000 authors because they were having a disproportionate impact on the citation scores of a small number of universities. In 2016-17, we designed a method for reincorporating these papers. Working with Elsevier, we developed a fractional counting approach that ensures that all universities where academics are authors of these papers will receive at least 5 per cent of the value of the paper, and where those that provide the most contributors to the paper receive a proportionately larger contribution.

International outlook
(staff, students, research)

7.5%

Proportion of international students 2.5%

Proportion of international staff 2.5%

International collaboration 2.5%

The ability of a university to attract undergraduates, postgraduates and faculty from all over the planet is key to its success on the world stage.

In the third international indicator, we calculate the proportion of a university's total relevant publications that have at least one international co-author and reward higher volumes. This indicator is normalised to account for a university's subject mix and uses the same five-year window as the "Citations: research influence" category.

Industry income
(knowledge transfer)

2.5%

A university's ability to help industry with innovations, inventions and consultancy has become a core mission of the contemporary global academy. This category seeks to capture such knowledge-transfer activity by looking at how much research income an institution earns from industry (adjusted for PPP), scaled against the number of academic staff it employs.

The category suggests the extent to which businesses are willing to pay for research and a university's ability to attract funding in the commercial marketplace – useful indicators of institutional quality.

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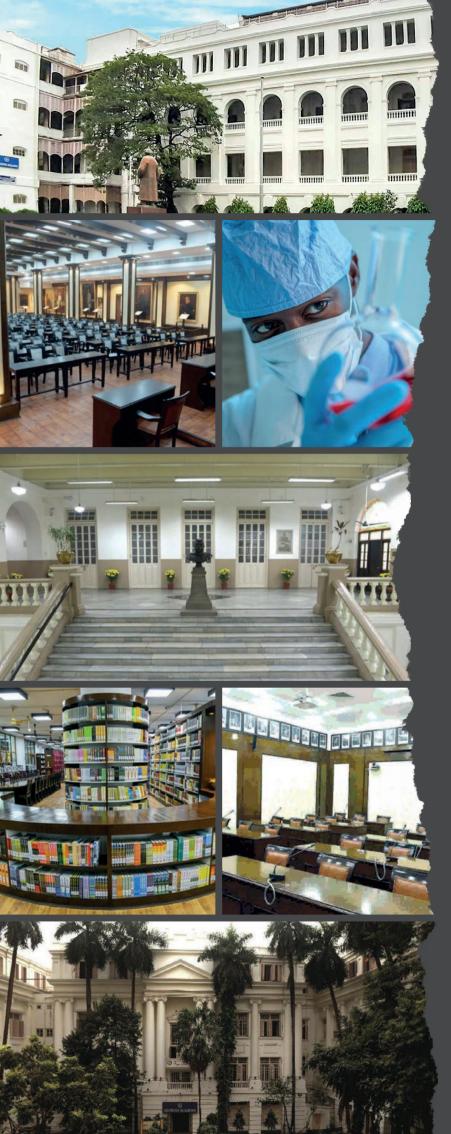WORLD UNIVERSITY
RANKINGS 2022*

45TH
OVERALL SDG
RANKING 2021*

1ST
OVERALL ARAB
RANKINGS 2021*

101 – 125
ENGINEERING AND
TECHNOLOGY
RANKING 2022*

101 – 200
SUSTAINABLE CITIES
AND COMMUNITIES
RANKING 2021*

*TIMES HIGHER EDUCATION

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A centre of excellence in research and teaching, University of Calcutta is home to a prestigious team of faculty and staff, and is dedicated to furthering its educational goals not only in India but also globally, signing MoUs with a large number of leading international universities.

To conserve its rich heritage, the University has recently undertaken extensive renovation projects, including its historic Darbhanga and Asutosh Buildings, as well as the restoration of original paintings by eminent Indian artists like Nandalal Bose and Jamini Roy. The University also houses the prestigious Asutosh Museum of Indian Art, which holds rare historic sculptures, paintings, folk-art objects, textiles, and terracotta from across India.

The University has a large number of fully functional smart classrooms, latest scientific labs and many career entrepreneurship hubs across its multiple campuses. These career hubs perform an indispensable role in facilitating skill-development, liaison with industry, and the overall development of entrepreneurship.

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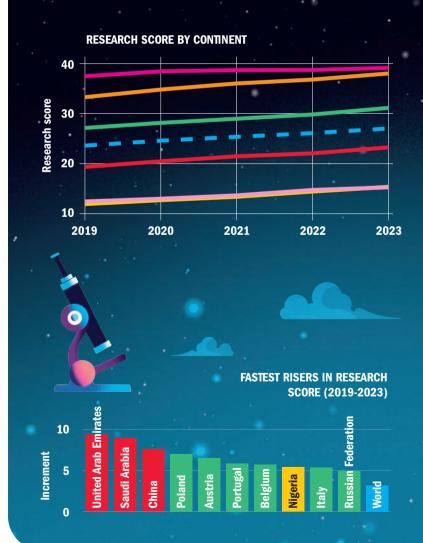
TRENDS IN RESEARCH

Strength unrecognised

Here we look at the pillars of the World University Rankings that measure research and citations.

While these metrics are of course linked, research (which measures research reputation, research income and productivity) actually shows a different trend from citations, which use Elsevier's bibliometric data.

Looking at research and citations side by side reveals an interesting trend: North America has comfortably led the pack for several years when it comes to research, but on citations Oceania is surging ahead, suggesting perhaps that research reputation is yet to catch up with output.

The top three regions when it comes to research are the Netherlands, Hong Kong and Belgium. For citations, it is Hong Kong, Australia and Switzerland.
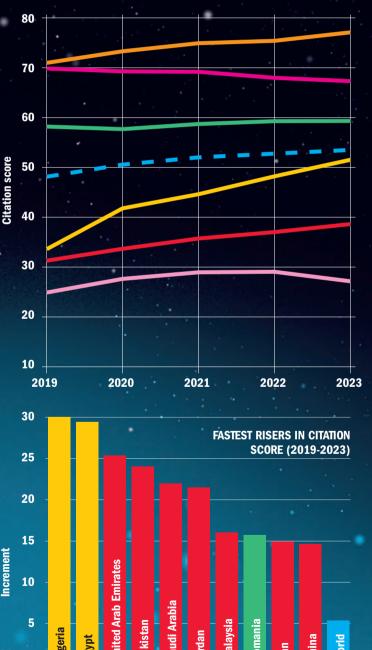
But which countries are rising quickly when it comes to research and citations? Nigeria is the country improving at the quickest rate, increasing the average citation score by 30 points since 2019, from 28 to 58. The second biggest improver is Egypt, which rose by 29 points, from 33 to 62; followed by United Arab Emirates, which rose from 44 to 70.

When it comes to the biggest improvements in research, Saudi Arabia and the UAE are high achievers, but China comes in third.

Legend:
- Africa
- Asia
- Europe
- North America
- Oceania
- South America
- World

CITATION SCORE BY CONTINENT

RESEARCH SCORE BY CONTINENT

FASTEST RISERS IN RESEARCH SCORE (2019-2023)

United Arab Emirates, Saudi Arabia, China, Poland, Austria, Portugal, Belgium, Nigeria, Italy, Russian Federation, World

FASTEST RISERS IN CITATION SCORE (2019-2023)

Nigeria, Egypt, United Arab Emirates, Pakistan, Saudi Arabia, Jordan, Malaysia, Romania, Iran, China, World

Fundamental needs

Entrepreneurs are the new kings, but academics doing basic research are key to our future – and they need proper funding, says **Brian Schmidt**

Brian Schmidt
Vice-chancellor and president,
Australian National University

Founded in the aftermath of the Second World War, the Australian National University (ANU) was created as Australia's first research university to help the nation "align itself to the enlightened nations of the world". Research and the advances based around it were deciding factors in the war; it is not surprising that the Australian government included in the founding of the university the likes of Howard Florey, whose work on penicillin saved millions of lives; Mark Oliphant, who helped develop radar and was a key part of the Manhattan project; and Kenneth Le Couteur, who worked alongside Alan Turing to help crack the Enigma code. In 1946, when ANU was created, university professors were national heroes and research was king.

Seventy-five years later, we see a world transformed by university research, where average life expectancy has risen from 45 to 73 years, and where extreme poverty has dropped from 55 per cent of the global population to less than 10 per cent. But professors and research are no longer seen as heroes – quite the opposite sometimes – with entrepreneurs the new kings.

This does not mean research is not important; it underpins almost every productivity-enhancing advancement made in the modern world. But in many developed economies, the indirect connection of research to the advancements seen by society has brought into question the usefulness of university research.

In Australia, successive governments have emphasised the need to undertake research directly connected to the needs of the country and of industry, and they have put their money where their rhetoric is. From 1992 to 2020, Australia's investment in pure basic research has dropped from 40 per cent of the government's total spend to 19 per cent, with the combination of pure and strategic basic research dropping over the same period from 64 per cent to 37 per cent. In 2021 the acting education minister even intervened in what arguably was already a beleaguered pure basic research pool, by refusing to support six recommended grants that he felt did not meet the national interest. This was quickly followed by a stringent national interest test for all grants that requires a direct connection to societal outcomes. The body that has been the principal government funding mechanism for basic research, the Australian Research Council, no longer funds basic research. While Australia has been at the leading edge of these interventions within advanced economies, similar pressures occur across most of the Organisation for Economic Cooperation and Development.

Many of these interventions are counterproductive, but universities

cannot continue to pretend that we can operate like it is 1946 given the massive increase in our societal role accompanied by an associated economic investment. For nearly 1,000 years, universities have had a monopoly on higher education. They have advanced, curated and stored human knowledge, and been given exclusive rights to grant most types of degrees. Given the nexus of education with the advancement of knowledge, this arrangement has remained unchallenged.

Universities' unique lock on higher education is now being challenged, largely because academic expertise is no longer required (or being used) by other education institutions to teach the types of offerings they provide to many millions of students around the world. Given the large amount of money being spent on education, commercial opportunities abound for companies to use their lower cost structures and agility to provide educational offerings that outcompete much of the university sector's offerings.

If this plays out as the fundamentals suggest it should, it will be devastating for the sector, because teaching activity has been used to fund much of the sector's research activity and serves as the financial underpinning to academic freedom and tenure in many institutions. Some elite universities have sufficient endowments and government research funding to be inoculated against this threat. But most research universities will need to evolve. This means ensuring that their research funding is tied to their research, whether through truly delivering research-led teaching that remains attractive to students, or through securing direct funding of their research from government, business and philanthropy.

Publicly funded universities remain essential institutions for the advancement of knowledge, and the value of fundamental research is consistently shown to have large economic spillover. Much of this value is indirect, and flows through the economy in a multitude of ways. Covid-19 vaccines are an illustrative example. Basic university research provided the underpinnings of all the rapidly developed vaccines – a beautiful, but rather rare, direct connection between basic research and impact. The value of the vaccines is not primarily gauged by the profit and loss statements of AstraZeneca, Pfizer and Moderna, but rather the dramatic positive effects their existence provided to people's lives and economies around the world. These indirect benefits far exceed the direct commercial benefits. Unfortunately, these stories aren't easy to tell. The future of research depends not only on universities making sure that our research benefits all of society, but that all of society also understands and appreciates that benefit.
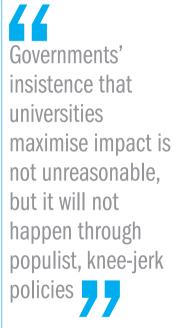
It is essential that basic research, as a public good with immense value, remains appropriately funded by government. Knowledge creation for its own sake as a human endeavour is worthwhile in its own right, but it is the advancement of human prosperity that attracts the hundreds of billions of dollars spent each year. Governments' insistence that universities maximise impact is not unreasonable, but it will not happen through populist, knee-jerk policies that are counterproductive. Rather, genuine collaboration between universities, government, business and NGOs will be the key to success.

Government has a critical role. The market is very good at efficiently making money from the opportunities it can capture, but government has to drag opportunities across the valley of death, from where they don't warrant commer-

cial investment, to where they do.

So much of the value of research's societal impact will not be commercial, and government must help steward this type of translation from ideation to implementation. Getting government policy settings right will be country-specific, but given what is at stake, far more attention and effort needs to be placed on this than is done currently.

In all cases, the expertise required to create and translate research effectively exists both inside and outside universities. This means providing the opportunities and incentives for researchers to move across the two domains. While basic research thrives with minimal interference to the researcher, applied research needs to be outcome-driven, and held accountable to specific and appropriate milestones. It is imperative that the accountabilities between the two modes or research are not mixed if we are to get the most out of our research funding.

Research has been critical in creating an unprecedented improvement in the global human condition over the past 75 years, but this improvement has been achieved by using more of Earth's resources than is sustainable. Humanity's continued improvement in prosperity requires research across all domains to ensure geopolitical stability, and that globally we operate in a way that is not only sustainable in the long term but pays off the substantial environmental debt accrued in the past that hangs over our future. The importance of research for the future is clear, but the question remains. Are we prepared to invest in and evolve the research ecosystem so it can deliver what humanity needs over the coming decades? ●

> **"Governments' insistence that universities maximise impact is not unreasonable, but it will not happen through populist, knee-jerk policies"**

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As the old order falls away, new bonds form

Global research collaboration is on the rise but faces a fundamental shift amid an increasingly unstable geopolitical landscape, says Meric Gertler

As the global research community looks cautiously towards a post-pandemic era, what might that future hold?

Prognostication in such volatile times is notoriously challenging. However, it seems apparent that two powerful and opposing trends will shape the global research environment in far-reaching and complex ways.

First, the good news. International collaboration (as measured by papers published by co-authors in two or more different countries) has been rising steadily for a generation. This has been driven by the recognition that the process of finding solutions to the world's most pressing problems is enhanced through global research cooperation. Moreover, international collaborations produce especially impactful research, as measured by citation counts. Publications with authors from three or more countries have a normalised citation impact of more than twice the overall global average.

The power of international collaboration has been strikingly demonstrated by the global response to Covid-19. The first months of the pandemic witnessed unprecedented international cooperation in response to this global health crisis. This included efforts to develop vaccines in a staggeringly short time, to formulate new diagnostics and therapeutics, to track the emergence of new variants in real time, and to rethink public health policy.

As the pandemic wore on, international co-publication returned to pre-pandemic levels, though with some variability based on the geography and intensity of outbreaks.

However, bibliometric indicators – useful as they are – probably understate the scale and importance of international research collaboration. Even as international co-publication returned to pre-pandemic levels, researchers collaborated in myriad ways across international boundaries. Authors used preprint servers to exchange research with colleagues from around the world on an unprecedented scale. The global scientific community shared data, samples, testing and fabrication facilities. International teams tested emerging hypotheses and joined global infectious disease surveillance projects. For example, the GISAID database provides public access to nearly 5 million Omicron genome sequences collected by researchers from some 199 countries and territories. These data have been critical in tracking, understanding and responding to Covid variants (and other infectious diseases) as they emerge.

In short, global research collaboration has been trending upwards for decades, with positive outcomes for researchers and societies alike. The benefits generated by this global research enterprise have been especially obvious during the pandemic, but have also accelerated advances in scholarship in many other fields.

Now the bad news. An unstable geopolitical landscape is undermining international research collaboration, and reshaping the global research mission. These developments will have profound effects on the pace and direction of scientific advances, and the geography of international cooperation.

Russia's invasion of Ukraine is perhaps the most obvious example, and its effects on research – and international research collaboration – are already being felt. Ukrainian research capacity has been decimated. Many scholars have fled the country (one estimate puts the number at more than one-

Meric Gertler
President, University of Toronto

> " US collaboration with Chinese researchers stalled in 2018 and 2019 and, for the first time in two decades, declined in 2020 "

PICTURES: GETTY

quarter). Many Ukrainian students are displaced or, quite literally, studying in bomb shelters.

Meanwhile, Russian researchers are facing boycotts, sanctions and restrictions. Many prominent collaborations involving Russian scientists or agencies have been cancelled or suspended. The €1.3-billion ExoMars project led by the European Space Agency has severed its ties with Russia. Cern has shelved or terminated partnerships with Russian scientists and institutions. The country now faces an exodus of talent, including thousands of young researchers. And the Biden administration has recently proposed a strategy to recruit Russian scientists and engineers to the US.

Another obvious example comes from rising tensions with China. A 2018 news story in *Nature* observed that scientific collaboration between the US and China had led to more high-quality publications than those of any other pair of collaborating countries, helping propel knowledge forward in many fields.

Recent geopolitical tensions between China and the US now threaten this collaboration. They have resulted in a host of immigration and visa challenges for Chinese students and scholars in the US. For example, in 2018 the State Department limited visas for Chinese graduate students in certain technical fields to a single year (with

the possibility of renewal), down from five years. The Trump administration's "China Initiative" committed law enforcement resources to investigate and prosecute alleged trade secret theft and economic espionage, with predictable effects.

The result of these and other similar measures was a chilling effect on collaboration with Chinese institutions and scholars, and racist actions directed at researchers and students of Chinese descent. Collaboration with Chinese researchers stalled in 2018 and 2019 and, for the first time in two decades, declined in 2020. Despite the recent decision by the Biden administration to cancel the most stringent components of the China Initiative, relations between the two countries remain strained, and this is likely to have lasting impli-

cations for science and discovery.

What these examples point to is the beginning of a fundamental transition in the geography of global research collaboration – one that follows the current restructuring of globalisation itself. In place of offshoring and globally distributed supply chains, geopolitical tensions are prompting major economies to pursue "reshoring" (repatriating overseas production activity) and "friend-shoring" (trading with like-minded partners that embrace similar political values). It seems likely that global research will follow suit, fracturing into blocs of "like-minded" partners. If so, then the days of wide-open global research collaboration may well be behind us.

These developments pose some important questions for research in higher education.

First, will the global scientific enterprise that has been so enriched by decades of international collaboration be irreparably undermined? As noted above, research partnerships, open information exchange and data-sharing proved extremely valuable during the pandemic. Researchers from rival nations collaborated as colleagues on shared goals. Will this still be possible in the future?

Second, the current reorganisation of international research collaboration is in many ways reminiscent of the Cold War, in which rival nations harnessed their own scientific enterprise to advance geopolitical and military goals. The most vivid expression of this competitive phenomenon was the "Space Race" of the 1950s and 1960s. As the current fragmentation proceeds, what impact will this have on the advancement of knowledge, and to what ends?

Third, while the protagonists in this emerging global competition are well known, many countries and regions of the world remain unaligned with either bloc. In an increasingly fragmented global research space, collaboration with such nations offers exciting opportunities. How can universities best engage in partnerships with emerging research performers such as India and many nations in Africa?

As the geopolitical environment becomes more challenging, it is likely that universities will be increasingly lonely champions for global research collaboration. ●

> "The current reorganisation of international research collaboration is in many ways reminiscent of the Cold War

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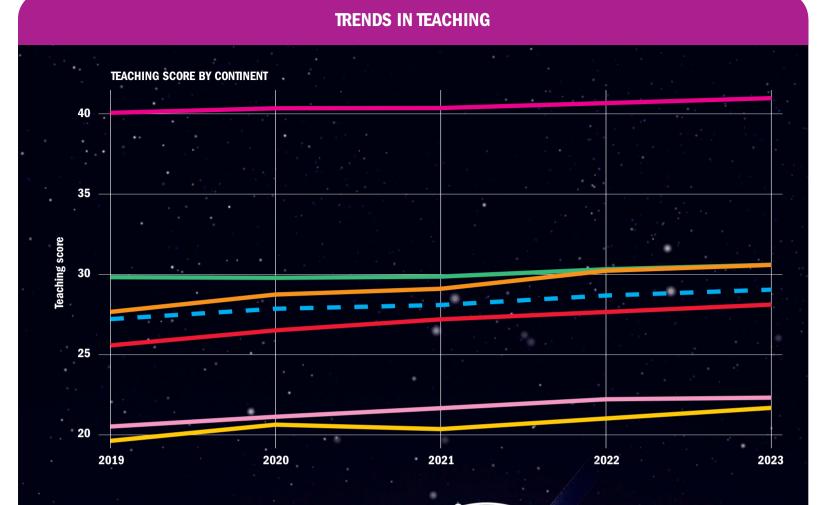
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TRENDS IN TEACHING

TEACHING SCORE BY CONTINENT

Teaching score

- Africa
- Asia
- Europe
- North America
- Oceania
- South America
- World

Lessons in learning

The pillar measuring teaching and the learning environment – which includes data on teaching reputation, the staff-to-student ratio, doctorate-to-bachelor's ratio, doctorates-awarded-to-academic-staff ratio and institutional income – shows the most variation in average score between continents.

North America scores dramatically higher than any other continent, with Europe and Oceania being the only other regions consistently scoring above the world average over the past five years. South America has performed slightly better than Africa historically, but this year shows Africa catching up, with an average score

of 21.7 compared with South America's 22.3.

The three countries with the highest average score for teaching are Hong Kong, Switzerland and the US (considering only countries with at least three universities ranked from 2019). But digging down into which countries are improving the most in this area reveals some interesting surprises.

Over the past five years the country with the biggest improvement in teaching score was Hungary, which increased by 11 points, from 19 to 30. Second was Saudi Arabia which rose from 23.5 to 30, followed by Morocco from 22 to 27.

FASTEST RISERS IN TEACHING SCORE (2019-2023)

Increment

Hungary, Saudi Arabia, Morocco, Indonesia, South Africa, New Zealand, China, Jordan, United Arab Emirates, Pakistan, World

Half-life of knowledge

We must accept the speed at which knowledge now becomes obsolete and the role lifelong learning plays in keeping skills current, writes Tan Eng Chye

Tan Eng Chye
President,
National University of Singapore (NUS)

"Teach a person to fish, and you may feed them for three-and-a-half years" may sound less inspiring than "Teach a person to fish, and you feed them for a lifetime", but the former more accurately reflects the current realities of tertiary education.

Breaking news travels at warp speed, accelerated by social media and instant messaging. In a matter of minutes, news can reach the four corners of the world. Such interconnectedness highlights the leaps made in information technology over the years while underscoring a persistent and inexorable phenomenon – the reduction of the half-life of knowledge.
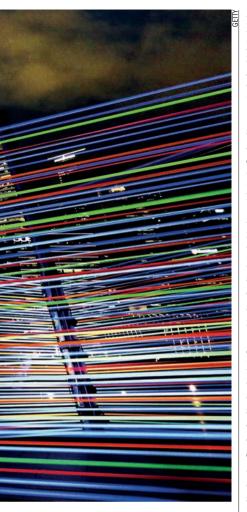
The half-life of knowledge, coined by Fritz Machlup in 1962, refers to the amount of time elapsed before half of the knowledge in a particular field is superseded or becomes obsolete. Given the speed with which knowledge develops and is shared, it is perhaps not surprising that this value is ever decreasing in many fields.

This phenomenon raises fundamental questions about our university degree programmes. How should a fresh graduate, filled with aspirations to change the world, deal with the harsh reality that a significant portion of their undergraduate training may be rendered irrelevant by the simple passage of time?

Distilling a degree programme is one possible, albeit drastic approach. We can consider equipping students only with evergreen core domain concepts. This training should take less time than our current degree programmes. As and when students require specific new knowledge, or need to upgrade existing knowledge, they can take short courses to bridge knowledge gaps and meet their professional needs. This type of "just in time" learning, also known as microcredentialling, helps to circumvent the shortened half-life by injecting cutting-edge knowledge at just the right time.

Another less disruptive approach is revitalisation. We can maintain the current degree programme structure, but provide avenues for graduates to return to university in the future. Such short stints of study can follow existing models for bite-sized, self-contained courses, or semester-long study periods undertaken with the support of employers.

One certainty is that university study will cease to be just one stage of life. Instead, "university studies" will become the de facto way of

studying, with a person continually refreshing and renewing their knowledge in tandem with or in anticipation of developments in industry, society and the world.

In anticipation of this, we created the NUS Lifelong Learners Programme (or NUS L³), which promises a 20-year period of student enrolment, from the point of undergraduate or postgraduate admission. In other words, a graduate of NUS can choose to come back to campus to take courses for at least 20 years from the day of matriculation.

Beyond the way knowledge is acquired, we are also grappling with working in an increasingly VUCA (volatile, uncertain, complex, and ambiguous) world. In such a context, can we continue to hold a siloed view of domain disciplines? In training law students, for example, we would be remiss not to show them basic programming, which can allow them to create customised commands to quickly and easily trawl through databases, with millions of legal records, to identify precedents.

Deep domain expertise is like a laser – a focused beam of knowledge that can cut through dense problems. However, real-world issues are increasingly multifaceted and ill-defined, often lacking a clear vulnerable spot at which a laser beam can be aimed.

As a mental experiment, consider the challenge of introducing autonomous electric vehicles to a city. This proposition involves urban design, city planning, the law, and engineering for accessibility. We can form a multidisciplinary team of experts, where each member is a domain expert, to tackle the issue. However, in all likelihood, we will encounter misalignment between domains, simply owing to differences in problem-solving methodology, thinking models or even nomenclature.

If we liken domain training to equipping students with specific lenses through which they can see and focus on information to solve a problem, then interdisciplinarity suggests that we should train students to operate across more than one domain. By educating them in core ideas from multiple domains and providing opportunities to apply their knowledge in authentic settings, students with interdisciplinary training can switch domain lenses as needed, solving problems using novel and unorthodox approaches that transcend domains.

To be clear, we are not advocating for dismantling deep domain training. Rather, we recognise that there is now an indisputable requisite to equip graduates with interdisciplinary knowledge and skillsets. We need both the agile lenses of interdisciplinarity as well as the deep-cutting laser of deep domain expertise. The former trains us to aim and focus the laser, while the latter allows us to cut to the heart of a problem.

NUS strongly believes in providing interdisciplinary pathways for our students. In 2020, we created the College of Humanities and Sciences (CHS) to provide an enhanced interdisciplinary undergraduate experience for students of the Faculty of Science and the Faculty of Arts and Social Sciences. CHS undergraduates can choose between deep domain training or the flexibility of interdisciplinary training of varying breadth and depth in modules offered by both faculties. Continuing our efforts to pave more interdisciplinary pathways for students, in 2021, we merged the School of Design and Environment and the Faculty of Engineering to form the College of Design and Engineering. More recently, NUS launched NUS College, Singapore's first honours college offering pathways to more than 50 majors across a half dozen degree programmes. The aim of NUS College, as explained by its inaugural dean, Simon Chesterman, "[is to offer] broad, interdisciplinary competencies that equip students for life, along with the opportunity to dive deep into areas in which you are passionate".

To quote Charles Dickens, "It was the best of times, it was the worst of times, it was the age of wisdom, it was the age of foolishness." Indeed, our experiences with the global pandemic and its effects on education over the past two years have given us the rare opportunity to engage in deep reflection and introspection. Witnessing the breakdown of resistance to adopting and adapting technology for teaching and learning during this time, we should be emboldened to re-examine and revolutionise some of our established, and perhaps outmoded, notions of how to offer higher education. ●

> "We need both the agile lenses of interdisciplinarity as well as the deep-cutting laser of deep domain expertise"

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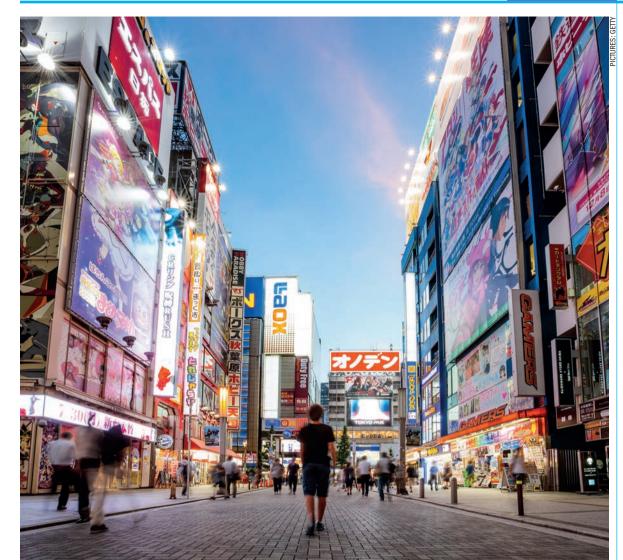29 Centres of Higher Learning and Research**

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> " In Japan, the artificial division between the sciences and the humanities in education begins early "

A path to learning for all

To find solutions to pressing problems, we must foster diverse voices by making the university a place to which anyone can belong, says Teruo Fujii

How do we prepare students for an unpredictable future? This question challenges higher education in the face of ongoing domestic and global crises. Since assuming the presidency of the University of Tokyo (UTokyo) in 2021, I have watched as new challenges posed by such threats as climate change, the Covid-19 pandemic and the war in Ukraine have forced us to rethink the role of higher education in society.

Such crises are beyond the scope of any single individual or organisation to solve. To address them, universities must critically re-examine the people that we serve, how we teach and the roles we play in a constantly shifting world. UTokyo seeks to reimagine the university as

an institution that serves the global public by nurturing diverse and talented individuals who can provide creative solutions to world problems.

But we are not only focused on global crises. There are also domestic problems that we must urgently

address. In Japan, universities are facing difficulties caused by declining numbers of younger people. With the fastest ageing and shrinking population in the world, the country needs to move beyond an exclusive focus on traditional university education.

First of all, we still need to foster the younger generation with the advanced knowledge and skills that will be required to maintain the country's economic productivity. At the same time, we need to create an environment that welcomes students from a variety of backgrounds. One way I hope to do this is by expanding opportunities for international students to study at UTokyo. We plan to significantly increase the number of courses

Teruo Fujii
President, The University of Tokyo

taught in English for undergraduate students of all levels. In fact, through the Global Science Course Transfer Programme in our chemistry department, it is already possible for transfer students to enter in the third year and complete their degree entirely in English.

That being said, we would also like students who have decided to study in Japan to acquire some degree of Japanese ability. After all, learning other languages is fundamental to fostering cross-cultural understanding. When I consider the specialties of our faculty, I know that UTokyo has the potential to provide instruction and expertise in many languages. I hope to use this potential to ensure that UTokyo becomes a place where people can come to learn in a rich linguistic environment.

Universities have an immense potential to serve wider portions of society if we innovate new kinds of learning for students of all ages. We can also support non-traditional students through continuing education and reskilling, enabling them to return after graduation to learn a new specialty. For instance, our subsidiary, UTokyo Extension, has been operating a data science school for about three years. Because of the high demand for skills in this area, we have also established a Mathematics and Informatics Center, which operates as a university-wide collaborative research organisation through which programmes are devised and offered by faculty with input from industry professionals.

Industry-academia collaboration is an important way in which universities can provide students with the tools to flourish in society. Since 2019, our undergraduates have had the opportunity to take part in the UTokyo Global Internship Program, one of many collaborative efforts between the multinational air-conditioning manufacturer Daikin Industries and UTokyo. Through this programme, students from any academic discipline can spend a short period at Daikin's overseas locations to acquire international experience and practical business training at the same time.

For students looking to start their own businesses, UTokyo offers a wide range of support, including training through the UTokyo Entrepreneur Dojo, as well as monetary support through a number of programmes and industry connections. Today, many stu-

dents enter university wanting to solve social issues, and our university has the resources and connections to get them started.

Another prominent initiative is the recent launch of the Smart City School. As the planning and building of our future cities require expertise and practical knowledge in a variety of fields, this school is designed to nurture talented future leaders in urban and regional development.

It is also critical not to understate the importance of the liberal arts and social sciences to the kind of cross-disciplinary efforts we need for the near future. Climate change and global health crises are not solved by technology alone; we also need to understand the social systems and historical circumstances behind them in order to find workable solutions. But, in Japan, the artificial division between the sciences and the humanities in education begins early. To address this, industry body the Council on Competitiveness-Nippon has launched a programme to create a platform

for STEAM (science, technology, engineering, arts, and mathematics) education from elementary through high school. The programme is supported by educational institutions and industries throughout the country, and UTokyo is looking forward to taking part.

Our commitment to interdisciplinary solutions is also evident in the recent establishment of our Center for Global Commons. Its goal is to promote the transformation of society by mobilising a broad spectrum of decision-makers to search for ways to safeguard the Earth as humanity's common property. It is developing a framework of global commons stewardship through interdisciplinary approaches.

UTokyo has also begun a project called "Spring GX". This training and financial support programme allows doctoral students in all fields to explore solutions to global environmental issues through the lens of their own research expertise.

Education can be a truly international and interdisciplinary activity. The issues we face today are complex and multifaceted, so they require creative solutions. In order to find those solutions, we must foster diverse voices by making the university a place to which anyone can belong.

I believe that it is through dialogue that we can create the new trustful connections and knowledge that will ensure the well-being of all, even in an unpredictable future. ●

> "The issues we face today are complex and multifaceted, so they require creative solutions"

Creating a city-wide culture of entrepreneurialism

In Shenzhen, local government, industry and fellow academics help foster a spirit of entrepreneurialism at SUSTech, one of the city's leading universities

The city of Shenzhen, in southern China, is renowned as a global technology leader, and the Southern University of Science and Technology (SUSTech) serves as a focal point for the city's excellence in this field. George Zhaojun Liu, associate professor in the Department of Electronic and Electrical Engineering at SUSTech, has worked at the university for five years, witnessing first-hand how a focus on entrepreneurialism has unlocked the potential of students and researchers alike.

"Before I joined SUSTech, Shenzhen was already part of a fast-growing technology cluster in the south of the country," Liu explains. "Even then, the environment of entrepreneurship was well established, and it's only gone from strength to strength."

Liu identifies three key reasons why SUSTech has been able to prioritise an entrepreneurial spirit: the city, timing and people. "Shenzhen has a robust pipeline that encourages researchers to develop their ideas into viable products. The entire city is geared towards turning great research into great practical solutions," he says.

When Liu joined SUSTech, he submitted a proposal to the Shenzhen Science and Technology Innovation Commission. This commission aims to build the research and development capacity of Shenzhen through various initiatives. Liu's project was funded to develop his work around the use of micro-LED technology within augmented reality and virtual reality solutions.

"Timing is another of Shenzhen's entrepreneurial strengths," Liu says. "The city encouraged high-level talent teams to create startups around the technology they were developing. Public authorities in the city are quick to support innovative proposals with research funding."

At SUSTech, collaboration is highly valued, and the university is keen to support entrepreneurialism across various industries. "It was through SUSTech that I found my business partner," Liu says. "I was an engineer with no experience in business. It was through SUSTech's Technology Transfer Centre that I found an expert who had been working in the display industry for 30 years. It was the start of a partnership that is helping turn my research into viable business products."

Liu's work in micro-LED research provides the perfect example of SUSTech's approach to entrepreneurship and innovation. The research emerged from the fact that the entire display industry required new technology for its screens combining a small form factor and a reduced environmental footprint.

"We use display materials for our work with micro-LEDs," Liu explains. "They have huge market potential as they will replace existing technology like OLED or LCD screens." Estimates suggest that the Chinese display market recorded $64.8 billion (£53.9 billion) in sales in 2021, and this number is set to rise. One notable growth area for Liu's research concerns the metaverse. If this innovative idea is to be realised, it will require extensive redevelopment of communications solutions, such as high-speed networks, but also enhanced display technology such as micro-LED screens.

Liu is a recent recipient of the Society for Information Display's Peter Brody Prize, which honours the contributions of researchers under the age of 40 who have made impactful technical contributions to the developments of active-matrix addressed displays.

SUSTech shows how collaboration between the public and private sectors can fuel entrepreneurialism. "In southern China, the entire Guangdong-Hong Kong-Macau Greater Bay Area is home to several huge cities that are part of a wider culture of innovation," Liu says. "My team has benefited from the city, the university and the industry. The area is like Silicon Valley 30 years ago. The opportunities are boundless."

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To find out more about SUSTech, visit
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Discovering antiviral treatments with computer-led research

Alfaisal University's College of Science is using computational modelling and Artificial Intelligence in the search for clinical treatments for Covid-19

Dr Souraya Goumri-Said, an associate professor of physics, deploys quantum methods and molecular simulations to observe the docking between molecules at the most basic scale, building modelling systems to test the efficacy of antiviral drugs and other therapeutics.

"Scientists are spreading information across the scientific communities. With Covid, we were lucky to have access to the structure of the RNA, and from this we have the protein, which is what we are targeting," said Dr Goumri-Said.
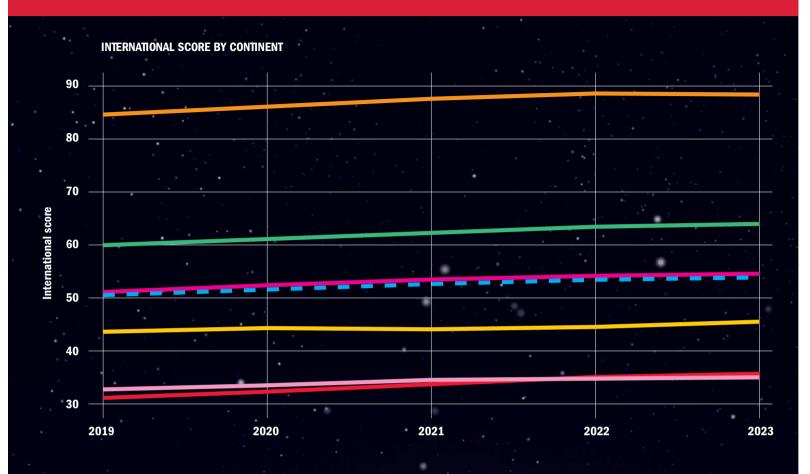
With new Covid-19 mutations appearing, finding effective treatments that will complement medicine's arsenal of vaccines will be critical to minimising the impact of the virus. Dr Goumri-Said's methodology looks at how the chemical structure of the virus is affected by a drug to discover how to thwart the progress of the virus. Antiviral drugs operate differently from vaccines - the vaccine is developed to stop infection, the antiviral is used once infection has been established, targeting specific proteins in the virus to inhibit its propagation through the body.

"We are selecting structures and trying to understand how they can interact together and how the drug can bond with and cancel the danger of this virus," says Dr Goumri-Said. Her computational methods also have certain advantages over in vivo testing. Investigations are safer and easier to conduct. With the virus rendered on-screen, there is no need for personal protective equipment or laboratory safeguards that virologists must work under.

For Alfaisal University, this means investment in research infrastructure, developing new tools to build on its life science expertise, bringing biology and chemistry together with physics and materials science to tackle problems at scale. The pandemic is humanity's most pressing problem right now. It will not be the last.

جامعة الفيصل
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To find out more about Alfaisal's life sciences programme, visit: www.cos.alfaisal.edu/en/ug-program

TRENDS IN INTERNATIONAL OUTLOOK

INTERNATIONAL SCORE BY CONTINENT

Legend:
- Africa
- Asia
- Europe
- North America
- Oceania
- South America
- World

Global horizons

The international pillar of the World University Rankings measures the proportion of international students and staff as well as international collaboration. Drilling down into this pillar reveals that the regions excelling are not the usual suspects.

Oceania scores significantly higher than any other continent, with Europe coming in second. At the other end of the scale, Africa has a better average score than both Asia and South America, although it has remained fairly stagnant in recent years.

The top three countries when it comes to international working are Hong Kong, the United Arab Emirates and Switzerland.

At the country level, Malaysia has improved more than any other, with an increase of 11 points over the past five years. Slovakia increased from 33 to 43 and Iran from 17 to 26.

FASTEST RISERS IN INTERNATIONAL SCORE (2019-2023)

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Partnerships for the Goals

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A global education for all is our goal

Maastricht aims to be intrinsically international by deepening its European ties while expanding its global engagement, says Rianne Letschert

Science by nature pushes boundaries and crosses borders. In considering the future of internationalisation in higher education in an increasingly global environment, the question can never be whether we should continue to internationalise. As the Organisation for Economic Cooperation and Development puts it: "Higher education drives, and is driven by, globalisation."

Does this mean that the internationalisation of universities develops automatically and therefore requires no further attention? By no means. Given their task to provide high-quality education, groundbreaking research and impactful services, academic institutions are obliged to adopt a responsible guiding role. As I see it, adopting this role, particularly in view of the major societal issues we face as a global community, will be our greatest challenge in the coming years.

This means that our internationalisation policy should focus on an ideal: global education for all, to enable as many people as possible to experience the richness of diverse perspectives offered by higher education. We owe it to society to keep explaining that while internationalisation policy may be costly for various parties in the short term, it is beneficial to everyone in the long term.

However, various preconditions must also be met. Maastricht University proudly presents itself, for good reason, as the European university of the Netherlands. Internationalisation is a fundamental element of our strategy, courses and success. It is omnipresent on our campus. This fulfils one of the necessary preconditions for internationalisation: a comprehensive approach. The choice to make the university fully bilingual also helps.

Another precondition is that internationalisation should be intrinsically motivated, rather than arising purely from the search for a revenue model. With 80 per cent of its immediate surroundings lying in two foreign countries, internationalisation at Maastricht has evolved since the 1990s as a matter of course.

Applying the maxim "think globally, act locally", European norms and values guide our actions. Connected to our dominant European academic community, our Europe-oriented teaching and research and our European institutes and programmes, Europe above all represents for us an openness to listen and learn from others. This is important when it comes to developing our region, contributing to the Netherlands and working in collaborations of equals with partners worldwide on the major challenges that have been set out in the United Nations' Sustainable Development Goals.

It is also logical that we should play a pioneering role within Europe in collaboration among academic institutions and their associates. Decades ago, Maastricht University established the transnational University of Limburg, an institutionalised initiative with degree

Rianne Letschert
President, Maastricht University

> **We owe it to society to keep explaining that although internationalisation may be costly at first, it benefits everyone in the long term**

programmes and research operating jointly with a partner university in the Meuse-Rhine Euregion. A more recent initiative is YUFE (Young Universities for the Future of Europe), a European-scale, European Union-supported partnership comprising 10 universities and five non-academic institutions with the aim of developing the European university of the future, enabling students to obtain a European degree.

YUFE has the explicit objective of adopting an accessible and non-elitist approach; by connecting the programmes of the participating universities both online and offline, students, staff and, in the long term, also citizens will also be able to gain international experience. This openness may be regarded as a precondition for a responsible internationalisation process aimed ultimately at creating an environment for global education that is accessible to everyone.

Without wishing to claim completeness, I would like to dispel the common feeling that student and staff travel is another precondition for internationalisation. Maastricht University has long been focusing not only on inbound and outbound mobility, but also on a process of internationalisation at home. After more than 30 years of plotting an international course, we have succeeded in attracting a highly diverse population of students and staff in terms of nationality. This means that our students already participate in a genuinely international classroom on the majority of our programmes. This gives them the opportunity to work on their intercultural competences and become global citizens within our own region.

There are also catalysts for internationalisation. Consider the rapid developments in technology-enhanced education that have taken place under the influence of the pandemic. The ever-growing global demand for higher education is a stimulating factor. The more accessible our education becomes, the more talent is made available for regions worldwide to work on increasing prosperity and well-being. Here the keyword is impact. Of course, our task is also fostered by a global labour market that expressly demands young talent with the ability to navigate an internationally interwoven society. It is also interesting that in the field of student mobility we are observing a global shift to the east. This part of the world is therefore also opening up.

With so much pointing in the direction of the globalisation of higher education, does this mean it will be an easy process? Far from it. There are still many issues to be resolved, ranging from practical obstacles to complex issues of knowledge security and ideological dilemmas about whether it is appropriate to cooperate with a particular regime or institution. I believe we should be openly discussing these issues more

frequently. We should be able to justify why we work with all our partner institutions, without being presumptuous or one-sidedly reflecting only our own Western-dominated value system.

I return to Maastricht. Internally, inclusiveness and diversity are high on our agenda, but we still have a way to go. Do all groups feel welcome and at ease here? How diverse is our university if we look beyond nationality? Are we admitting enough first-generation students, migrants and refugees? And what about gender accessibility? Are we as oriented towards listening and dialogue as we like to believe, or are we still thinking from the perspective of the superiority of the Old World? And to what extent do we dare to shift our focus away from excellence? For the sake of preserving reputations, will we continue to be guided by rankings that lead to a rat race, rather than focusing on societal impact? All these questions have yet to be answered.

It is up to us to tackle these internal obstacles ourselves. Unfortunately, however, we cannot remove external hurdles through our own initiatives. Numerous factors obstruct the route towards international cooperation and solidarity. What consequences will the Ukraine crisis have, and to what extent is nationalistically oriented populism an impediment? Are nation states prepared to invest in international solidarity and cooperation? Do they dare to remove barriers that hinder mobility and knowledge-sharing? What will be the effect of the current discussion on knowledge security? Protectiveness would seem an obvious response, yet health issues, security considerations and climate change require broad cooperation. And under what conditions can we cooperate with institutions in countries with regimes that do not share our norms and values?

As an optimistic person by nature, I say let's roll up our sleeves and get to work. Externally, showing an understanding for our society, we will have to repeat and substantiate our argument time and again. Internally, we have taken the right path, and we are following it step by step. I look forward to future discussions on the formulation of an appropriate global engagement policy and our next steps to towards enabling barrier-free European education. All these will bring us closer to our goal: global education for all. ●

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THE
World University Rankings 2021: Top 250
Young University Rankings 2022: 33rd
Impact Rankings 2022 (UN Sustainable Development Goals): Top 100

3 GOOD HEALTH AND WELL-BEING 22nd **11 SUSTAINABLE CITIES AND COMMUNITIES** 54th **16 PEACE, JUSTICE AND STRONG INSTITUTIONS** 20th
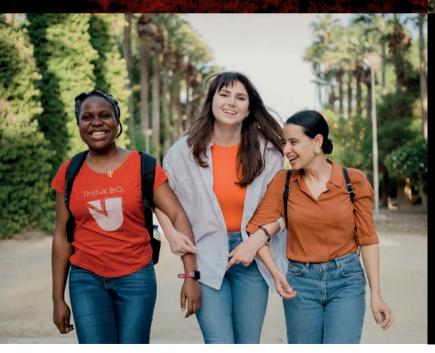
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UNIVERSITY of NICOSIA

unic.ac.cy

The 2022 *Times Higher Education* World University Rankings reaffirm the University of Nicosia's (UNIC) global standing, ranking it among the Top 800 universities in the world. One of the core areas in which the University excelled in the 2022 expanded edition is International Outlook, where UNIC ranked 47th worldwide, attesting to our innovative internationalisation strategy and especially to our notable success in offering cross-border education.

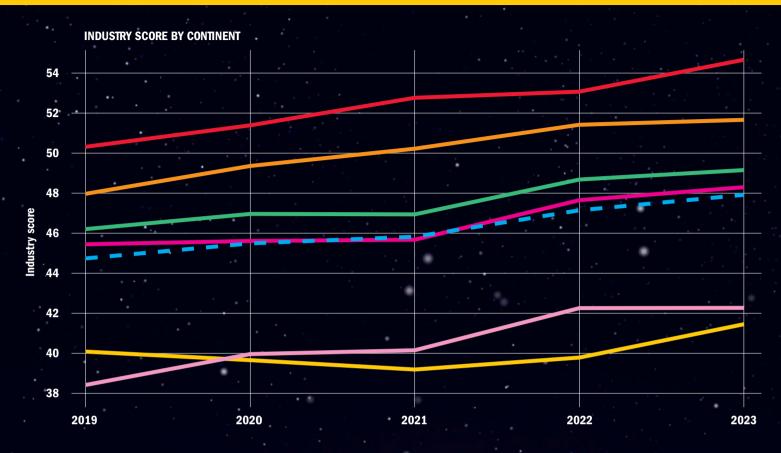University of Nicosia
RANKED =47th
FOR INTERNATIONAL OUTLOOK

THE WORLD UNIVERSITY RANKINGS 2022

www.thewur.com

THE WORLD UNIVERSITY RANKINGS 2022 TOP 800

THE WORLD UNIVERSITY RANKINGS 2022 TOP 180 YOUNG

THE WORLD UNIVERSITY RANKINGS 2022 TOP 130 EMERGING ECONOMIES

THE IMPACT RANKINGS 2022 TOP 400

TRENDS IN WORKING WITH INDUSTRY

INDUSTRY SCORE BY CONTINENT

Industry score

54
52
50
48
46
44
42
40
38

2019   2020   2021   2022   2023

Africa
Asia
Europe
North America
Oceania
South America
World

Pairing off

Industry income reflects a university's ability to help industry with innovations, inventions and consultancy, and at a national and continental level reflects a region's connection to the wider economy.

Here, the data reveal that Asia, while lagging behind the world on international working, leads on working with industry. North America scores close to the world average, and Africa is closing the gap on South America.

The top three countries when it comes to knowledge transfer are the Netherlands, Belgium

and Indonesia.

Perhaps unsurprisingly, the place that has improved the most in working with industry over the past five years is Hong Kong, where the average score rose from 53 to 64. The second largest increase was in Denmark, which rose from 52 to 60.

FASTEST RISERS IN INDUSTRY SCORE (2019-2023)

Increment

12
10
8
6
4
2
0

Hong Kong
Denmark
Austria
Greece
Russian Federation
South Korea
United Arab Emirates
Canada
Pakistan
Poland
World

A tentative embrace

European attitudes to working with industry have shifted, but poor incentives and difficulty reaching small firms prevent progress, reports Ben Upton

Amid growing global competition, Europe's universities continue to lead the world in many areas of research. But when it comes to shepherding good ideas to market, academic conservatism and structural issues still seem to get in the way.

Between 2018 and 2023, the world average score for industry income increased from 43.4 to 49.1, a rise of about 6 points; in Europe, the rise was 45.0 to 49.4, a smaller increase of around 4, showing that the continent is lagging behind when it comes to working with business. Given European institutions' high performance in other areas, why is working with industry their Achilles heel?

The strength of industry links varies widely between countries, often mirroring the maturity of research systems and economic development. The Netherlands, Belgium and Germany sit comfortably at the top of the table, with the first scoring almost double the figure for Azerbaijan, Georgia or Malta, which make up the bottom.

Considering the age of many European systems, is it possible that Europe has an attitude problem when it comes to working with industry, inherited from a time in which a monastic academia sat detached from society? Where the pursuit of knowledge was at odds with earthly concerns such as income and costs?
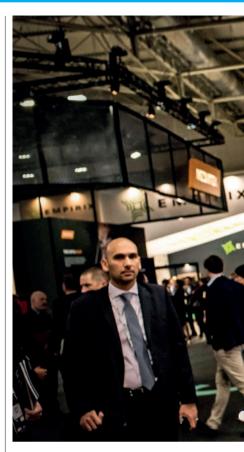
Donato Iacobucci, professor of applied economics at Italy's Marche Polytechnic University, says he still sees some "cultural resistance" to working with companies even though there have been "dramatic" changes in attitudes over the past 20 years, citing the example of his local University of Macerata (UNIMC), founded in 1290, which recently changed its motto to "humanities for innovation". He points out that

"universities in Europe were historically mainly based on humanities", which are not as obvious industry bedfellows as science- and tech-focused institutions.

In summer 2021, the European University Association (EUA) surveyed its members about their innovation activities. Peter Haring Bolívar, a professor at the University of Siegen and chair of the EUA's innovation expert group, says it was "surprised" that three-quarters of responding universities had both an innovation agenda and an action plan.

"Twenty years ago, some of the older colleagues even considered it a bad style to cooperate with industry, because the purity of science is disrupted. This ivory tower thinking is completely gone," he says.

Although more academics may be minded to work with industry, Europe still faces serious barriers to following through on its ambitions.

Most of the experts *Times Higher Education* spoke to say a lack of incentives for institutions or individuals to work with industry is the main problem. There are pockets of stimulus – Italy's national evaluation agency now hands out a small portion of university funding based on technology transfer performance, for
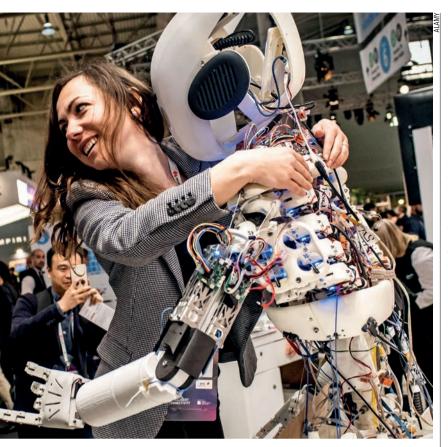
example – but Iacobucci says the disciplinary panels that evaluate individual researchers still look only at publications.

Another oft-cited European problem is the predominance of small and medium-sized companies and a lack of bodies to link them to academia. "You need businesses which are capable of absorbing innovations," says Marja Makarow, professor emerita at the University of Helsinki and a board member of the European Union's European Innovation Council, which gives commercialisation grants to researchers.

She says Europe has a "huge problem" staffing university technology transfer offices with the expensive specialists needed to work with smaller companies. In Estonia, a lack of intermediary agencies to

> **"** People in academia and industry tend to be scared to lose control, but if you really want to interact you have to get the humans to work with each other **"**

GETTY

foster connections forces innovators to found start-ups instead of linking up with existing companies.

Leonard Hobbs, director of research and innovation at Trinity College Dublin, says smaller companies tend to think shorter term and want to work on low-cost projects, while the highest-flying principal investigators are less inclined to work with smaller companies because they can get the funding they need elsewhere.

Unlike peers in the US, academics and companies in Europe also have smaller domestic markets to ply their wares or ideas. "Your ability to scale to a large market is not as seamless," says Hobbs, referring to the "country-first" mindset of Europeans as a "soft inhibitor", despite EU efforts to lift cross-border barriers to goods and services.

But there are those in Europe who have overcome many of these issues. Among them is KU Leuven Research & Development, set up in 1972 by academics from the Belgian university who had been doctoral students in the US.

Over its 50 years, the self-funding technology transfer office has won "full strategic, financial and operational autonomy" from the university, says Koenraad Debackere, its executive director. "You need a lot of entrepreneurial activity to be possible, and this does not always coincide with the hierarch-ical structure within a university," he explains. Becoming autonomous gave them the flexibility to hire specialist staff and make deals on intellectual property, which is more difficult when working within the constraints of universities with government funding that comes with strict provisions.

One of the office's big successes is the anti-HIV drug tenofovir, a collaboration between a chemist in what was then Czechoslovakia, a virologist in Leuven and a junior chief scientific officer at a major pharmaceutical company. The last agreed with his employer to pass the licence for the in-development drug to his collaborators. "This was a pure gentleman's agreement," says Debackere, adding that the "astoundingly informal" collaboration between the three scientists required trust and understanding across the academia-business divide.

A quite different entity designed to ease industry links is Automotive Center Südwestfalen, a company set up by Siegen's Haring Bolívar and jointly owned with local Mittelstand companies (the German concept of long-lived and often family-owned firms that underpin the country's engineering-heavy industries).

"People both in academia and industry tend to be scared to lose control, but if you really want to interact you have to get the humans to work on an everyday basis with each other," says Haring Bolívar, adding that the idea for a shared, neutral structure for technology transfer was borrowed from the US and Japan and is generally in an "infant state" in Europe.

The diversity of universities and their environments means each must choose its own approach to working with industry. What is cutting edge in some countries may be quickly outgrown in those with bigger and better opportunities.

In Spain, a morass of bureaucracy means that PhD placements within companies are a simple and efficient option for building mutual understanding. Helena Ramalhinho Lourenço, lead for social science transfer at Barcelona's Pompeu Fabra University, says the two-page forms needed to set up an industrial PhD are a breeze compared with standard public grant agreements.

In contrast, the University of Helsinki's Makarow says short-term agreements between European universities and companies have in the past been "absolutely devastating" for the doctoral students involved because they are kept away from the fundamental work that would be best for their careers.

Relationships also develop differently. Trinity College Dublin's work with the US chipmaker Intel began when the latter wanted specially trained graduates for its Irish operations, before growing to cover research. The Norwegian University of Science and Technology (NTNU) has long held research agreements with hundreds of companies, but now updates them to cover cooperation in education.

"We want a strategic collaboration so it's possible to discuss at the top level where we want to go, what is needed and how can we deliver students with competencies for their companies," says Toril Hernes, the university's vice-president for innovation.

One of NTNU's biggest partners is Norway's state-owned oil company Equinor, which is looking for greener sources of energy. "Every company needs to have sustainability in the forefront, [but] many don't know how to make their business sustainable," she says.

Working with industry can create knowledge, improve teaching and serve society. Many European academics have broken the taboo, they just need a little push to consummate the relationship. ●

> "What is cutting edge in some countries may be quickly outgrown in those with bigger and better opportunities"

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Well-built industry ties can deliver the goods

Society benefits from partnerships if research quality, ethics, oversight and social impact monitoring are safeguarded, writes Zeblon Vilakazi

The origin of the University of the Witwatersrand (Wits) is inextricably linked to the mining industry and the development of the city of Johannesburg, the economic and industrial heartland of Africa.

Over the past 100 years, as new industries have flourished and the city expanded, the university responded – through producing the high-level skills required to advance the economy and by conducting research and fostering innovation to transform society.

Now, more than ever, there is an urgency for universities to conduct trans-, multi- and cross-disciplinary research across the public and private sectors, beyond geographic boundaries, to solve some of the great planetary challenges of the 21st century, some of which are yet unknown. While universities must continue to conduct discovery research, we need to remember that translational or applied research that influences public policy is just as valuable, and often has greater social impact.

I see innovation as the successful deployment of new ideas, inventions or methods that benefit society, with a strong emphasis on collaboration and multidisciplinarity across sectors. By breaking down silos, we can work across disciplines to find solutions to the major challenges that confront humanity.

We need an innovation ecosystem that includes students and researchers based in institutional entities, physical and virtual hubs, accelerators and incubators. Coupled with entrepreneurial activities and industry support where appropriate, this can do much to transform the lives of many people, particularly in Africa and the Global South.

There is no doubt that society can benefit when research-intensive universities work closely with industry partners, provided that four fundamental considerations are agreed to up front.

First, the quality of the academic project must not be compromised. Universities must hold true to their values, pursue the truth, maintain the highest ethical standards and remain academically independent.

Second, mutually beneficial, synergistic relationships that advance the public good must be developed.

Third, partnerships must be developed that are well governed and regulated, stipulating at the outset all matters related to owner-

Zeblon Vilakazi
Vice-chancellor and principal, University of the Witwatersrand Fellow of the Royal Society, UK

> " Translational or applied research that influences public policy is just as valuable as discovery research, and often has greater impact "

ship, intellectual property rights, copyright and risk mitigation and resolution.

Finally, the impact of the projects, programmes or outputs must be determined up front, and should be regularly measured, evaluated and, where necessary, adjusted.

Wits has sustained various successful partnerships with different industries over time. We were the first South African university to own an IBM mainframe computer, for instance. This partnership gave the university a head start in developing its computer science teaching programme decades ago.

Fast-forward to 2019 and Wits, in partnership with IBM, became the first university on the continent to access a quantum computer via the IBM Q Network. The benefits are multiple. IBM has established a research laboratory – one of only 12 in the world – in the university's Digital Innovation Precinct, where academics and students have the opportunity to access the latest technology and to work with industry experts to solve real-world problems through research into precision medicine or climate change. Wits has established WitsQ, a multidisciplinary quantum initiative, and has been appointed to chair South Africa's quantum computing programme.

Wits was born out of a school of mines, which was founded when gold was discovered in Johannesburg. These links have remained for a century: Wits continues to host one of the most eminent mining engineering schools in the world and works closely with industry.

For example, in partnership with a major mining house, the Wits DigiMine was established on the university's campus to simulate high-tech, deep-level mining; to find ways to make mining safer; to

prioritise sustainability; and to put people and the planet before profits. The partnership includes the funding of research chairs, postdoctoral and postgraduate positions across disciplines and the development of a curriculum that ensures that students are properly trained and employable when they graduate.

At the same time, the university remains independent and autonomous because of the strong governance frameworks in place and its ability to attract funding from multiple sources, reducing its reliance on industry, the state or any one sector.

In another example, as part of the war effort in the early 1940s, engineers at Wits, under the leadership of Basil Schonland, developed and tested the first radar set from our campus to a hill some kilometres away. Fast-forward 70 years and researchers are now testing the safe encryption

and transmission of data through light on the same spot. Coupled with our postgraduate students' construction of "peco grids" using solar panels, this research means that, soon, people living in remote villages will be able to access electricity and data without having to connect to any fixed infrastructure. These are local solutions to local problems that could be monetised and developed at scale with industry partners for the benefit of communities.

A final example is a successful technology called SmartSpot. Invented by Wits researchers Bavesh Kana and Lesley Scott, this device to accurately measure the accuracy of TB tests has been endorsed by the World Health Organisation and is helping to save the lives of millions of people across the globe. It would never have reached that scale if it had not been commercialised: in this instance, through synergistic relationships with the public and private sectors, researchers, investors and patients. The university benefits, too. Ultimately, the innovation advances the public good.

All that said, there are instances in which partnerships with industry may be unsuccessful. These should not be pursued for the sake of trying to make them work. Rather, universities should regularly evaluate their partnerships and maintain only mutually beneficial relationships with like-minded social actors that benefit humanity. •

> **"Our postgraduate students are building 'peco grids' using solar panels, which will soon allow remote villages to access electricity and data without having to connect to any fixed infrastructure "**

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Every day our researchers and educators are working to address key healthcare challenges and improve patient outcomes.
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Researchers a**t RCSI University of Medicine and Health Sciences** are dedicated to finding new ways to treat metastatic breast cancer that has spread to the brain.

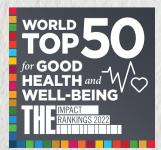Prof. Leonie Young and her research team found that almost half of the tumours that spread from the breast to the brain had changes in the way they repair their DNA.

The team found that an existing drug known as a PARP inhibitor could prevent these cancer cells from repairing their DNA, which results in the cancer cells dying.

"Our study represents an important development in getting one step closer to a potential treatment for patients with this devastating complication of breast cancer."

Prof. Leonie Young
RCSI University of Medicine and Health Sciences and Beaumont RCSI Cancer Centre published in *Nature Communications* January 2022

WORLD **TOP 50** *for* **GOOD HEALTH** *and* **WELL-BEING**
THE IMPACT RANKINGS 2022

THE HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY

THE HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY (GUANGZHOU)

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> " The collaboration of people from different backgrounds makes for a better learning and research environment "

Rethinking and refining

Next year will see a significant update to our methodology to more accurately reflect universities' work. Duncan Ross and Billy Wong explain

Duncan Ross and Billy Wong
Duncan Ross is chief data officer, and Billy Wong is principal data scientist, both at *Times Higher Education*

Times Higher Education's World University Rankings are the leading global league tables of university performance. Created in 2004, the rankings have grown from just 200 institutions to just under 1,800. They rank research-intensive institutions across a wide range of metrics, which fit under the four pillars of teaching, research, industry links and internationalisation.

Since the rankings were launched 18 years ago, the methodology has been tweaked several times but altered substantially just once, in 2011. Those changes ensured that it remained robust as the global higher education landscape expanded and became more international. We believe it is now time for another significant update to the methodology, so that it continues to reflect the outputs of the diverse range of research-intensive universities across the world, now and in the future. We're in a world where students and faculty increasingly look to travel to study and work, and where the focus isn't exclusively on the research output of universities.

The new iteration of the methodology will focus on three main areas:
● A wider range of bibliometric measures that gives more insight and stability from year to year

● Improvements to the international metrics to better reflect country size and diversity
● An expanded role for knowledge transfer, including a new metric.

Bibliometric measures
The World University Rankings focus heavily on research-intensive institutions across the world. As such, the quality of their research outputs is one of the most important measures. Currently we use average field-weighted citation impact (FWCI) to assess the overall research quality of an institution.

The FWCI of a publication measures the number of times it is cited by other academic publica-

tions, compared with the average number of citations of publications of the same type, the same subject and the same year of publication. The FWCI can range from 0, for publications that have never been cited, to infinity. The average FWCI of all publications is 1.

The average FWCI of an institution is the arithmetic mean of the FWCI values of all of its academic publications within a particular window. The World University Rankings use a five-year window.

The FWCI had served us well for many years as a measure of overall quality. Over time, however, more and more up-and-coming institutions participate in the rankings. These institutions tend to have fewer publications. Their average FWCI performance is thus more susceptible to undue influence from a small number of papers with an exceptionally high FWCI.

We are replacing the current citation metric based on the FWCI with three new metrics, each measuring a different aspect of research quality.

We want to continue to measure the average research quality based on the FWCI, but without being skewed by papers with an exceptionally high FWCI. Therefore, we will measure the 75th percentile FWCI instead. According to our internal modelling, this measure is robust against outliers and better reflects the average research quality than the arithmetic mean.

In addition to that, we also want to measure the amount of excellent research outputs from institutions. Excellence here is defined as the best 10 per cent of publications by FWCI. An institution's performance in this measure is calculated as its number of publications within the top 10 per cent, normalised by the size of the institution.

Finally, we want to measure the level of thought leadership, or influence, an institution has in each subject. This is different from traditional FWCI calculations in the sense that we consider not only the number of citations, but also how influential the citing papers are. This is similar in idea to Google's PageRank algorithm.

International outlook

We believe that internationalisation deeply strengthens universities. Knowledge is inherently global, and the collaboration of people from different backgrounds makes for a better learning and research environment.

To help us evaluate this, we currently have three metrics: proportion of international students; proportion of international staff; and proportion of publications with at least one co-author from an international institution.

For the next generation of our rankings, we will introduce a new metric and make some changes to the current ones.

For several years, we have been producing a teaching-focused ranking of Japanese universities: the Japan University Rankings. As well as including metrics on the proportion of international students and international staff, this ranking examines another aspect of internationalisation – the provision of international learning opportunities for domestic students. We measure this by collecting data on the number of students on international exchange programmes (in essence, a measure of outbound student exchange). This has proved a useful data point, and we will include this metric in the World University Rankings.

For international metrics, large countries – some of which may be home to many diverse cultures – are at a disadvantage when compared with smaller countries and regions. Students can travel hundreds of kilometres in the US and still be in the same country. That is a luxury that doesn't exist in Luxembourg or Qatar or many smaller nations. The result: it is "easier" for universities in Luxembourg and Qatar to do well in these measures.

After much experimenting, we think a better approach is to adjust the data to account for population size. This moderates the impact of size discrepancies while still providing valuable insight into the positive role of international activity.

Knowledge transfer

One of the measures of success of a higher education institution is its positive impact on the wider society. In our current methodology, we use the amount of research funding provided by industry as a proxy for the knowledge transfer between industry and academia. However, this alone is not sufficient as funding is an input measure and knowledge transfer is an output measure.

We will introduce a new metric that measures how much of an institution's research is cited by patents. This provides a more direct measure of knowledge transfer, and is one that we already use within the *THE* Impact Rankings (in SDG 9: Industry, Innovation and Infrastructure).

Moving forward

The first edition of the World University Rankings that implements the new methodology described above will be the 2024 edition, to be launched in early autumn next year.

These changes, together with additional work we are undertaking to improve the calculation approaches, will make the World University Rankings more insightful and robust, but with minimum additional data collection requirements for universities.

We also hope to be able to open the World University Rankings, and associated subject rankings, to more universities to reflect a broader view of research-based higher education. ●

> " Our changes moderate the impact of size discrepancies while still providing valuable insight into the positive role of international activity "

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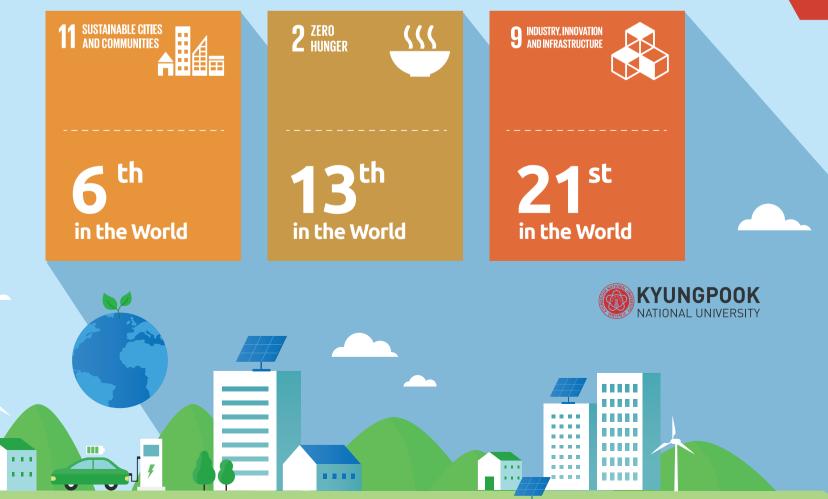
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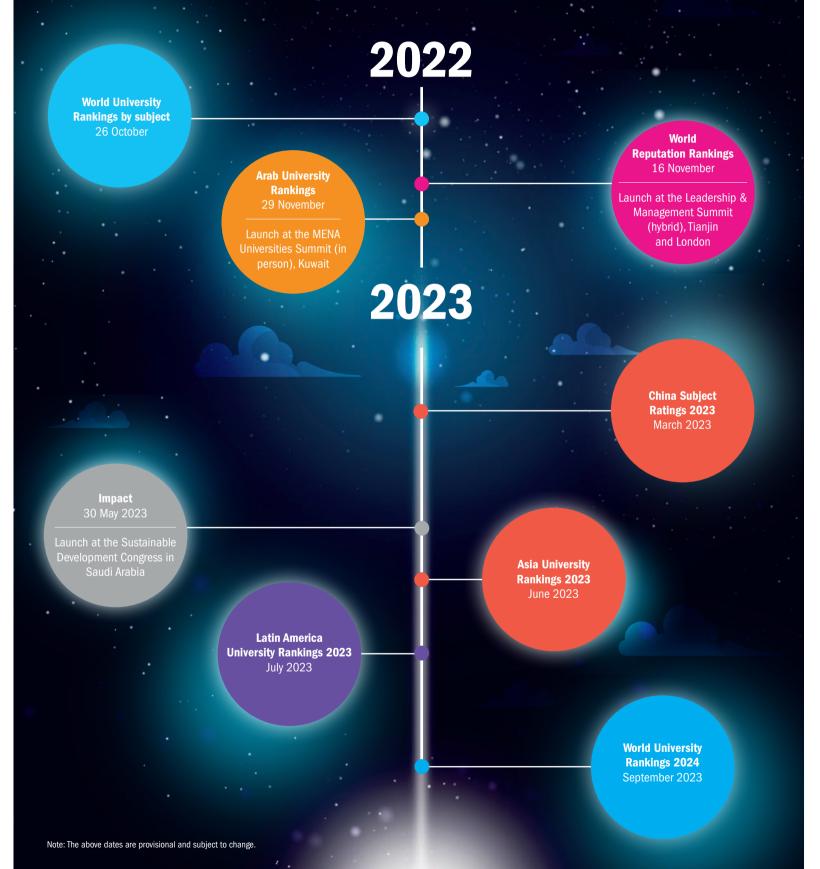
THE IMPACT RANKINGS 2022

Ranked 13th in the World

11 SUSTAINABLE CITIES AND COMMUNITIES	2 ZERO HUNGER	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
6th in the World	**13th** in the World	**21st** in the World

KYUNGPOOK
NATIONAL UNIVERSITY

Rankings diary

Stay up to date with all our rankings

2022

World University Rankings by subject
26 October

Arab University Rankings
29 November

Launch at the MENA Universities Summit (in person), Kuwait

World Reputation Rankings
16 November

Launch at the Leadership & Management Summit (hybrid), Tianjin and London

2023

China Subject Ratings 2023
March 2023

Impact
30 May 2023

Launch at the Sustainable Development Congress in Saudi Arabia

Asia University Rankings 2023
June 2023

Latin America University Rankings 2023
July 2023

World University Rankings 2024
September 2023

Note: The above dates are provisional and subject to change.

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Students measuring water quality at Six Nations of the Grand River

Bonny Ibhawoh — Founding Director, Centre for Human Rights and Restorative Justice

A message from
OUR PRESIDENT

"Here at McMaster, we must be guided by the great traditions of this university, but in this rapidly changing world we must be prepared to break new ground and discard old rules where necessary."

— Henry Thode, President and Vice-Chancellor of McMaster University, 1961-1972

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David Farrar, President and Vice-Chancellor

University Hall

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McMaster's Faculty of Health Sciences is the birthplace of **evidence-based medicine**, a practice that incorporates proven data and patient values into clinical experience. It embodies our commitment to using the most up-to-date evidence, combined with research excellence and community care.

Community-engaged

Community-engaged research is a top priority at McMaster. With a drive to build relationships across global, national and regional networks, community-engaged research creates a more equitable world for everyone.

Sustainability-focused

McMaster researchers don't have to stay in their lanes. We want disciplines to work together to tackle the most pressing challenges facing our world today. The **United Nations Sustainable Development Goals** act as a blueprint for our research and a measure of its success.

McMaster University

The needle-free future of vaccines

PAST

In 1973, McMaster researcher **Frank Graham**, left, discovered the HEK 293 cell line. This foundational discovery led to the development of the first viral vector, a modified virus-like entity that triggers the body's protective responses without causing infection. As COVID-19 gripped the world, global researchers turned to the same viral vectors to produce some of the first COVID-19 vaccines, saving millions of lives.

PRESENT

Today, McMaster researchers are building on the work Graham started nearly 50 years ago. After two decades of research on a tuberculosis vaccine, the inhaled vaccine team at **Canada's Global Nexus for Pandemics and Biological Threats** is using these findings to develop a next-generation COVID-19 vaccine. Inhaled into the lungs directly, it is more effective than traditional injected vaccines and better protects against variants of concern.

FUTURE

The work doesn't stop there. Our researchers are also working on a universal vaccine that would need to be administered just once and would provide protection against future strains of COVID-19.

McMaster University

Canada's Global Nexus for Pandemics and Biological Threats

Canada's Global Nexus for Pandemics and Biological Threats builds on McMaster's established position as a world leader in infectious disease research, evidence-based medicine, and advanced manufacturing. Hosted at the university, it is a hub for international networks of experts and partners who can act fast and act together in the face of serious and emerging threats to global well-being.

BRIGHTER WORLD

brighterworld.ca

Aging reimagined

Problem-based

Evidence-based

Community-engaged

PAST

Dozens of researchers from across disciplines brought together decades of expertise and research in healthy aging to create the **McMaster Institute for Research on Aging** (MIRA).

PRESENT

Today, MIRA is on a mission to optimize the health and longevity of older adults. Scientific Director **Parminder Raina**, a pioneer in the field of healthy aging, leads the **Canadian Longitudinal Study on Aging**, the first and most extensive cohort study of its kind in Canada. It provides researchers worldwide with a rich dataset reflecting the many factors that shape how we age.

Parminder Raina, Canada Research Chair in Geroscience

FUTURE

Stuart Phillips is the director of the **Physical Activity Centre of Excellence** (PACE), a state-of-the-art exercise and research centre that works directly with older adults and people living with cancer, heart disease, multiple sclerosis and spinal cord injuries. Insights from PACE support our work on improving older adults' mobility and developing more effective health care and social services.

McMaster University

A global leader in nuclear innovation

Problem -based

Evidence -based

Sustainability -focused

PAST

McMaster's nuclear reactor has been the site of monumental achievements for more than 60 years. **Henry Thode**, left, a visionary of nuclear research and McMaster president, designed and constructed Canada's first mass spectrometer and spearheaded the medical application of radioactive iodine therapy. In 1994, **Bertram Brockhouse** won the Nobel Prize in Physics for his work on neutron scattering.

PRESENT

Today, we are the world's leading supplier of life-saving medical isotopes used in cancer treatments around the world. Other isotopes we produce at our reactor are leading to the discovery of next-generation medical devices. And our materials research institute is globally known for driving innovation in materials analysis and discovery.

FUTURE

Small Modular Reactors (SMRs) have the potential to change the future of clean energy production. With the goal of Net Zero in mind, our experts, including **David Novog**, are leading SMR design, deployment and safety initiatives.

BRIGHTER WORLD
brighterworld.ca

Creating sustainable communities

Problem -based

Community -engaged

Sustainability -focused

PAST

Our university may be based in Hamilton, Ontario, but our community-driven research improves lives across Canada and around the world. Our work with northern Canadian communities informs the crucial research being done on climate change. Inequity drives our affordable housing research; and decades of clean water supply issues in Indigenous communities have led to one of the largest community-driven research projects on access to clean water.

PRESENT

We continue to bring together the best and brightest researchers from a breadth of disciplines to tackle issues like climate change, inequality and scarcity of resources.

Dawn Martin-Hill leads a massive project that is co-creating safer access to clean water for Indigenous communities. Activist and researcher **Ingrid Waldron** and cancer biologist **Juliet Daniel**, below, are studying the multi-generational health impact of environmental racism. **Bonny Ibhawoh** has been appointed by the United Nations to monitor and shape a response to inequalities and human rights violations around the world.

FUTURE

Working together with our communities, our innovative approach to research ensures that we are creating a greener, more equitable future for all.

Keena Trowell is working to ensure equal access to affordable, reliable, clean and sustainable energy and **Elkafi Hassini** is leveraging existing ride share services to deliver food to those in need.

Ingrid Waldron, HOPE Chair in Peace and Health

Juliet Daniel, Cancer Biologist

McMaster University

Bold ideas, big impact

McMaster is ranked among the **top 100 universities globally*** and was named Canada's **most research-intensive university**†† four of the last five years. Our brilliant experts, world-class teaching and learning facilities and groundbreaking research are advancing human and societal health and well-being in our local and global communities.

Together with our partners, we are creating a **brighter world**.

6th in the world for Good Health and Well-Being†

19th in the world for Clinical and Health*

37th in the world for global impact†

4 Nobel Laureates

Home to more than 70 research centres and institutes

McMaster University
Hamilton, Ontario, Canada

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